THE

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OF

MEDICINE AND SURGERY,

AND

THE COLLATERAL BRANCHES OF SCIENCE.

CONDUCTED BY A NUMBER OB PHYSICIANS.

Homo naturæ minister et interpres tantum facit et intelligit, quantum de naturæ ordine, re vel mente, observaverit; nec amplius scit aut potest. *Francis Bacon.*

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REMARKS ON ANGINA PECTORIS.

BY JOHN WARREN, M. D.

In our inquiries into any particular subject of Medicine, our labours will generally be shortened and directed to their proper objects, by a knowledge of preceding discoveries.

When Dr. Heberden, in the London Medical Transactions, first described a disease under the name of Angina Pectoris, so little had it attracted the attention of physicians, that much surprise was excited by the communication. From the most striking and distressing symptoms, with which it was attended, pain and stricture about the breast, it received from him its denomination; and he soon after published farther remarks on this subject, with the history of a case and appearances on dissection.

That all the cases which this author had noticed as accompanied with affections of *a somewhat similar nature*, were instances of true Angina Pectoris, is by no means probable; for not less than one hundred of those were supposed by him to have fallen under his observation. Of those, three only were women, one a boy; all the rest were men, and about the age of fifty.

In the same work were communicated some observations on this disease made by Dr. Wall, who likewise added a case of dissection.

Dr. Fothergill, in the fifth volume of the London Medical Observations and Inquiries, 1774, published his remarks upon An-

gina Pectoris, from which we learn, that that eminent practitioner had seen so few cases, as to have been at a loss to assign its proximate cause, and its place in the Nosology.

Two cases, which he described, were followed by dissections, one of them made by that celebrated and accurate anatomist, John Hunter; and, though Dr. Fothergill does not appear, then, to have seen any dissection himself; yet, from the confidence which he placed in the faithfulness of the reporter, he was induced so make up an opinion, that the heart must have been principally, if not altogether, the seat of the complaint.

Dr. Percival, in the third volume of the Edinburgh Medical Commentaries, gave a case and dissection; as did also Dr. Johnstone, in the first volume of the Memoirs of the Medical Society of London; and Dr. Black, in the fourth volume of the same.

The above were considered by Dr. Parry, in a Treatise written professedly on the subject, 1799, as all the real histories of this disease, which had then appeared, though many dissertations had been written on cases supposed to have fallen under the same description, but which were essentially different from the true Angina Pectoris. From an examination of a considerable number of detailed cases, and discoveries on dissection, he has given it, what he supposed to be, its proper place in the nosological arrangement of Cullen, under the trivial name of Syncope Anginosa.

Considering, then, this disease as a mere Fainting, and differing from the common Syncope, only in being preceded by an uncommon degree of pain or anguish in the region of the heart, and being excited into paroxysm by motion, he has defined it as an Idiopathic Variety of Syncope Cardiaca, and distinguished it from another denominated Palpitans.

The following, according to Mr. Parry, may be taken for the character of Syncope Anginosa.

A diminished action of the heart, the effect of bodily motion, chiefly walking, preceded by a stricture and remarkable pain in the breast, generally across the left mamma; and, he adds, without palpitation.—He also esteemed the absence of difficult respiration as making one, if we may so call it, of the negative

signs, by which this variety is distinguished from Angina Palpitans, in which the heart is supposed to be differently affected.

Dr. Heberden has noted other marks by which it is to be identified. It is important that all such should be ascertained, lest some mistake should be made in applying the appearances on dissection, as without due care on this point, derangement in the organization of particular viscera might be supposed to have accompanied diseases of *one* description, when they belonged to *another.*

The remarkable facts, that the paroxysm, or indeed the disease itself, is excited more especially upon walking up hill, and after a meal; that thus excited, it is accompanied with a sensation, which threatens instant death if the motion is persisted in; and, that on stopping, the distress immediately abates, or altogether subsides ;....have, according to concurrent testimony of authors, formed a constituent part of the character of Angina Pectoris ; and, as Dr. Heberden in particular has recognized them, we shall consider them as legitimately admitted.

To these, a long continuance of the fluidity of the blood when drawn from the body, or even as existing in the vessels after death, and its sudden termination, have sometimes been added for the purpose of assisting us in our diagnostic conclusions.

Dr. Parry has taken an extensive view of the symptoms and morbid changes, discovered on dissection, of the heart and its appendages, for the purpose of determining upon what particular mode of organic affection they depended.

The result of his inquiry was an opinion, that a connection subsists between ossification of the coronary arteries of the heart, and Angina Pectoris, or Syncope Anginosa ; and that from the great variety of other organic derangements, such as enlargement or smallness of the heart, undue fatness of the heart, thickness of the pericardium, induration or ossification of the valves, ossification and dilatation of the aorta, and their combinations, originated a disorder of different character; and hence he infers, that ossification of the coronary arteries of the heart is the predisposing cause of this disease.

Mr. Charles Bell has also reported the case of a patient, who died in 1801, and in whom the coronary arteries were found os

sified; and this circumstance, although it was combined with unusual accumulation of fat about the heart, and a partial ossification, not only of the mitral valves, but also of the beginning of the aorta, he considers as the cause of the disease. The strength of the heart, he supposes, depending on the circulation through the coronary arteries, when this is impeded by ossification, the organ becomes too weak to transmit the blood through it, and the paroxysm ensues.

A doctrine so important in the pathology of the heart is deserving of a careful investigation; for the result, though from the probably incurable nature of the affection, it might not much extend the triumphs of the *art*, might fulfil a desideratum in the *science* of medicine.

That a weakness or incapacity of the heart to empty itself may be produced by mal-organization of parts; and that, in such condition, paroxysm may be brought on by accelerated motion of the blood, and consequent indirect debility, assisted, perhaps, by mechanical obstruction, is obvious. This cause thus inducing a state of predisposition, muscular motion may readily be conceived as constituting an exciting one.

Whether any particular mode of derangement is connected with Angina Pectoris in the relation of cause and effect, must be discovered by dissections and faithful reports of morbid appearances in the dead body. A number of such reports sufficient for this purpose does not, as yet, seem to have been made. It has been seldom that the physician, after having witnessed the form of the paroxysms, has had it in his power to compare them with his discoveries after death. Some of the earliest observers had no suspicion of ossification in the coronary arteries. Dr. Jenner, in particular, mentions a case of dissection, in which the examination of them was not thought of; and a modern author has even doubted whether organic affection was concerned in producing the symptoms, or whether they were any thing more than a mere spasm of the heart.

If it should be proved that ossification of these arteries is the cause, it will probably be still difficult to explain, why it should produce its effects in *this* particular form, rather than that of a *continued* disease, as is known to be the case in by far the larg-

est proportion of those which occur from mal-organization of the thoracic viscera in general.

Four cases of this disorder have fallen under my observation, one only of which has afforded opportunity for dissection.

The first of these was of a gentleman whom I visited, whilst he was labouring under a violent fit of it, brought on by ascending the fourth story of his boarding house to his lodging room. From this he was speedily relieved by tincture of opium. As he was a stranger in town, I saw him no more, but was informed, a few months afterwards, that in a similar attack he had suddenly expired.

The second was of a man advanced of sixty; but I did not attend him, and had no particulars of the history.

The third patient was a gentleman, who applied for advice about four years since, and who, for several years preceding, had suffered occasional paroxysms whenever he walked up hill or against the wind, and, from his habit and symptoms, evidently had the complaint. By a careful regimen and abstinence from exciting causes he was relieved.

The following appeared to me as strongly marked a case as has been described, and, though from the remoteness of his residence, it was impossible for me to notice the progressive stages of it, so minutely as might have been desired; yet, as the deficiency was supplied by the information of able and accurate observers, it may perhaps be not altogether unworthy of record, especially as the appearances on dissection were noted and communicated by a physician of eminence and experience, who attended him in his last illness.

In the month of April, 1806, the Rev. James Neal, a clergyman from Greenland, in the neighbourhood of Portsmouth, New Hampshire, consulted me on account of a slight pain in his breast, with difficulty of respiration, occasioned, as he said, by walking rather fast in the street when apparently well. His pulse was rather small and quick, and his countenance pale. After a few minutes rest, and some stimulant applications, he recovered, and pursued his walk.

From the history which he gave me of his state of health for some time past; from his habit of body, which was rather ple-

thoric and inclining to corpulency, with a short neck, though his age was under that which has been usually marked as most incident to this disorder ; I was induced to suspect the nature of the symptoms, and accordingly enjoined upon him great caution in his diet and exercise.

I had too soon an opportunity of confirming my suspicions ; for on the following Sunday, whilst attending public worship in Brattle Street, Mr. Neal was seized with a most violent paroxysm, under circumstances peculiarly affecting. In the midst of a discourse highly interesting in its nature, and delivered with a great degree of fervor, whilst the eyes of all were fixed upon the preacher, he was observed to raise his hand, and forcibly rub his breast ; his voice faltered, and his countenance changed ; and, after one or two efforts to proceed, he sallied back on his seat, and became insensible.

He was immediately carried from the pulpit to a neighbouring house, during which, the vital functions appeared to be nearly suspended, as the pulsation in the wrist, and even in the heart, were scarcely perceptible.

After a few ounces of blood were drawn from the arm, by the help of æther and the use of frictions, he began to recover. The blood first drawn was black, and flowed slowly, but in a few minutes became florid, and apparently more fluid. The pulse then rose and became full, as if a weight, or some compressing cause, had been suddenly removed, and the circulations soon after assumed their natural and equable force. As soon as he was able to speak, the first symptom he complained of, was an indescribable pain or rather anguish across his breast, extending along the left mamma down to the middle of the humerus.

After being removed to his lodgings, he gave the following account. For one or two years past he had been afflicted with what he called the asthma, though not attended with cough. Within the two or three last months his fits became more distinct and severe, and his *inspiration* more difficult. Once or twice he had been attacked, whilst in the performance of his official duties in the desk, but the distress had occasioned only slight interruption in his exercises.

Whilst walking rapidly, especially if against the wind, he had frequently been obliged to stop suddenly, to turn round and stand still for a minute or two, upon which the difficulty would subside, and he would pass on with a more moderate pace. Upon going up stairs the fits would frequently occur; and any unusual degree of muscular motion generally brought them on. He was at this period seldom attacked in the night, and never whilst sitting still. In the intervals he was, now, perfectly free from all uneasiness whatever.

A full dose of tincture of opium was administered on his arrival at his lodgings; and, as some degree of pain still continued in the middle of the sternum, a blister was applied and a cathartic given; and in two or three days he thought himself sufficiently strong to return to his family, about fifty miles from Boston, to which, as he was very desirous of doing so, I consented, on condition that he should be two or three days in performing the journey. I informed him, at the same time, what my opinion of his disorder was, and he received it with astonishing equanimity. From my first mentioning to him its name, he had made it his business to acquaint himself with its nature and tendency, from such books as he could procure on the subject, and met his sentence, in the fatal termination which they announced, like a philosopher and like a Christian. Indeed, his disposition appeared to be uncommonly mild and equable, and the effort was perhaps the less in the resignation which he manifested.

He was directed, as soon as he should reach home, in the first place to withdraw from pulpit exercises, as well as from all sources of mental emotion, and from intense application to his studies. Moderate exercise on horseback in good weather was recommended; but all sudden and forcible exertion prohibited. A cooling and laxative diet, without animal food or ardent spirits, and occasional eccoprotics and injections were prescribed, with the strictest injunction that his meals should be sparing.

During the paroxysms he was ordered to take opium and æther, or the fetid gums; to bathe the feet in warm water;

and, under the direction of a physician, to lose a little blood, unless special circumstancess should forbid it.

The nitrate of silver was prescribed in solution, in doses of a quarter of a grain three or four times a day, in his intervals, increasing them as he could bear them. Perpetual vesications, or issues in the form of setons or caustics, in the thigh or arm, were enjoined, and above all things, as far as possible, a tranquil mind.

After having pursued this course for a few days, he informed me by letter, that having, contrary to advice, travelled home in one day, a violent *palpitation* ensued, from which he was then slowly recovering.

In the following October, he observes, that he had preached a few times, but was obliged to desist in the midst of the exercises. That cold weather, particularly with easterly winds, brought on the paroxysms, as did walking, even slowly, in the evening, or immediately after a meal. That when he was about to speak in public, or to commence professional duty, especially in the evening, from some unaccountable agitation, though at the same time he was not sensible of any real fear, a paroxysm would seize him before he could begin ; and that upon these occasions ardent spirits gave him present relief. That the easy motion of a carriage appeared to be beneficial ; that he could ride on horseback, if very slowly ; and that *walking* he always found the most dangerous exercise, excepting only the act of undressing.

Agreeably to my advice, in the autumn of 1806, when I saw him at Boston, he determined on a voyage to Georgia, where he passed the winter, and suffered less violent attacks than in a more northern climate, but derived no permanent advantage from the change.

After his return, in the spring of 1807, the paroxysms became more violent and frequent, and of longer duration, and his mind had become so susceptible, that it was necessary to prevent any person's approaching, except of the family ; and the only relief he obtained was from frictions, opium, assafœtida and pediluvium.

Fowler's solution, (arsenite of potash) was administered in the month of August, in doses of six drops, three times a day,

which produced sickness and headach so violent, that it was thought expedient to suspend it.

The use of tobacco, to which he had long been habituated, was prohibited in Georgia ; and by returning to it, the fits were somewhat mitigated. One of the distressing symptoms was a distinct sense of choking, from which he was relieved by that article. In a violent headach he was bled to the amount of thirteen ounces, by which he was evidently weakened, though blood-letting was strongly indicated by the pulse.

Mr. Neal continued in a situation, from which death was daily expected to relieve him, till the summer of 1808, when he suddenly expired ; and Dr. Bracket, a highly respectable practitioner in the vicinity, transmitted the following account of appearances on dissection.

PORTSMOUTH, October 7, 1808.

SIR,

Knowing that you saw and prescribed for the Rev. James Neal, of Greenland, N. H. whose disease you pronounced to be Angina Pectoris, and presuming it may be in some meausure satisfactory to you to see a statement of the appearances on dissection ; as he was a patient of mine, I take the liberty of describing to you the discoveries which were made by Dr. Spalding and myself.

Mr. Neal died about the middle of last July. For several days before he died, he evacuated blood from the lungs and rectum, and was much emaciated ; notwithstanding which, he walked or rode out almost every day. He died in a paroxysm apparently less distressing than some of his preceding ones. Upon opening the body, the pleura costalis and mediastinum appeared to have been highly inflamed. The left lobe of the lungs, generally, adhered to the pleura and mediastinum. The adhesion of the right lobe was more slight. This organ exhibited, externally, a livid appearance, and felt firmer to the touch than usual. The pericardium adhered in every part firmly to the heart ; of course, not a drop of fluid or halitus was contained in it. The pericardium adhered likewise to the parts surrounding it externally. So united were all these organs and membranes that they exhibited one complete mass. The heart was, I presume, more than one third part larger than its natural size. Its weight was one pound seven ounces. The two ventricles, being filled with water, contained one pint. The heart was in a high state of inflammation. The coronary arteries were considerably enlarged. The internal structure of the heart was natural, but the aorta ascendens, from its commencement for about two inches, was much enlarged.

On opening the aorta, its inner coats, from its origin, extending upwards about an inch and an half, exhibited an appearance of schirrosity. This space was very much thickened and indurated with nodes or tubercles as big as a large pea, and nearly as hard. The valvulæ tricuspides were equally indurated.

The stomach was much distended with air, so much so as to push out of their natural situation the heart and other organs. Yours, &c.

JOSHUA BRACKET.

As I cannot entertain a doubt whether this was an instance of true Angina Pectoris, having witnessed the form of a whole paroxysm, and carefully noticed the symptoms, and the correspondence with those enumerated by authors in general, I shall take the liberty of making a few remarks by way of inference from it. But, by no means, with an intention of controverting the principal doctrines contained in Mr. Parry's very valuable treatise on the subject.

And first. This case seems to countenance an opinion, that ossification of the coronary arteries of the heart is not essentially connected with Angina Pectoris; and, therefore, is not the cause of the disease.* These arteries, it is true, were largely dilated, and might, in some measure, have concurred with derangement in the structure of other organs in the chest, in rendering the heart incapable of transmitting the blood, which, by means of accelerated circulation, might have been too rapidly or forcibly poured into it. But it is, in this view, only a cooperating cause.

Secondly. Though, by establishing an arbitrary definition of this disease, and stating any particular circumstances, a priori, as belonging to it, the absence of palpitation and difficult respiration might be included in it; yet, from their presence, in this case, which in a general view appeared so strongly marked, we may be led, at least, to question the doctrine. Some degree of

* In a collection of Cases of Organic Diseases of the Heart, by Dr. J. C. Warren, published in the second volume of the Medical Papers of the Massachusetts Medical Society, this opinion is farther corroborated. Of ten cases unaccompanied with symptoms of Angina Pectoris, four, at least, were found, on dissection, to have been attended with ossification of the coronary arteries.

both these affections, indeed, might be expected, as so natural a consequence of mal-organization of the heart and aorta, that their accompanying any one form of it more frequently than another may be considered, so far as we are capable of explaining it, as an accidental circumstance, and by no means to be enumerated among the distinguishing signs of either.

Thirdly. Angina Pectoris may, probably, be the effect of an incapacity of the heart to empty itself of blood (forced into it in an accelerated circulation,) sufficiently fast to maintain the vital functions. Such incapacity or weakness, as it has been called, depends upon some deviation of the heart, or its appendages, from their natural state; and, in proportion to these deviations, and the number and nature of the organs affected, *ceteris paribus*, will be the predisposition to the disease.

Whether there is *any* particular state of *any one* of these organs, on which the symptoms designating it may more especially depend; and whether there may not be certain *combinations* of derangement, which, whenever existing, may bring on this disorder; and certain *other* combinations, which may give origin to those forms of *continued* disease, which attend on morbid structure of the heart and its appendages in general, we shall not presume to decide.

Possibly these *combinations*, or, perhaps, some single circumstance of derangement, may so affect particular nerves, as suddenly to induce the symptoms, such as pain in the left breast and arm, and suspend the circulations; but we do not, at present, seem to possess a sufficient number of facts to pronounce with any degree of certainty on this subject.

In the mean time, as we naturally wish to simplify in our investigation of causes, and philosophy teaches us to do so, we should be induced to extend our inquiries with this view; but it should be remembered, that, in the results, we are sometimes apt to simplify too much.

SOME REMARKS

ON THE

MORBID EFFECTS OF DENTITION;

MORE PARTICULARLY WITH REFERENCE TO THE DISEASES OF TEETHING CHILDREN IN SUMMER AND AUTUMN.

BY JAMES JACKSON, M. D.

I. It is familiar to all, that very material changes in the health are usually produced during the growth of the first set of teeth; and, being familiar, it does not excite wonder. It is, however, not a little remarkable that the growth of these bodies should be productive of such serious effects on the whole system; effects, which, in many cases, are so totally disproportioned both to the size and importance of the parts. Mr. John Hunter* represents the teeth as acting in some degree like foreign bodies on the alveolar processes and on the gums. It is not, however, consonant with the usual harmony of living systems, that such should be the case. We may, perhaps, more properly consider the effects of dentition analogous to those produced by the developement of the sexual organs at the age of puberty, and by certain other local changes at other periods of life. It is owing to the greater irritability of infancy, that, in a process comparatively unimportant, such powerful effects ensue.

II. The effects which are produced in consequence of dentition are, first, that the ordinary and regular actions of the system are interrupted, so that they are performed imperfectly; secondly, that some of those actions are occasionally suspended; thirdly, that a morbid irritability is produced, in consequence of which morbid actions will be excited in the system, by slighter causes than under common circumstances.

III. Effects of the first and second sort are very often noticed with respect to the stomach and bowels. In both of them it is very common to see their actions imperfectly performed, and

* Natural History of the Human Teeth, p. 81.

occasionally suspended in consequence of dentition. The same is true with respect to the urinary organs, and so of other parts of the system. Effects of the third sort are exemplified in the great susceptibility of the varying diseases of the season, which may be noticed in teething children. The diseases here referred to occur during the winter and spring, mostly in the parts above the diaphragm; and during the summer and autumn in those below.

IV. It would seem that it is on the mucous membrane that the effects of dentition are chiefly produced. Now in certain organs this membrane is the seat of important functions. Such functions may or may not be materially affected by diseases of the membrane. If the mucous glands only are affected, the consequence will be a great flow, first of serous fluid, and afterwards of mucus, and there will not ensue any very serious effects on the system. But if the whole membrane be affected, the functions of the part will be more or less interrupted, and proportionate effects on the general health will ensue.

V. Although the season and other external circumstances determine in a great measure the affection to be produced in teething children; yet at all times the stomach and chylopoietic viscera are extremely liable to be affected; and when affected, the disease produced is more frequently severe and lasting, than when other parts become the seats of disease.

VI. In summer and autumn, persons of all ages are liable to be weakened and enervated by the heat and moisture of the atmosphere. When to this remark are added those in the preceding paragraphs, we shall perceive that the diseases of teething children must, in general, be much more severe in summer and autumn, than in winter and spring.

VII. From the causes which have been recited, a very large proportion of all teething children are affected with disorders of the first passages during the warm season. These disorders are in various degrees, and are sometimes very slight. They are, however, very severe in some instances, and particularly when aggravated by certain errors in diet and regimen.

VIII. In the disorders referred to there is a general similarity; and exact lines of distinction between their varieties

do not appear to have been drawn by the hand of nature, with respect either to their proximate causes, or to the phenomena produced by those causes. An attempt will be made to arrange them under distinct heads. There must, however, be intermediate cases, which will not properly fall under either of those heads.

IX. The first affection we shall describe occurs at all seasons; but more frequently in warm than in cold weather, and often in the early part of summer. It is most common in children with large heads and thick necks. It commences suddenly; often after taking food, which is difficult of digestion, or in too great quantity. The child at first appears fretful or uneasy; will not be amused; hangs his head, and wants to lay in arms; sometimes a slight chilliness is noticed, but shortly he becomes thirsty, appears warm and dry, particularly about the head and neck; the face grows red, and the features appear to swell. The child now commonly falls into a deep and heavy sleep, with his eyelids perhaps half closed, or his eyes often rolling up. He often starts in his sleep, or groans, and sometimes general convulsions of the voluntary muscles take place. The respiration is heavy, and laborious in some cases. The pulses are full and accelerated. Sometimes a rash appears on the skin.

X. In this state the patient will continue for an uncertain period; from two to six hours. In some instances a sweat will then come on; the symptoms will abate, and after a longer interval some crude matters will be discharged by stool. But in far the greater number of instances, the symptoms before described are followed by vomiting. All the food, which had been taken at the last meal, and sometimes for two or three meals, is now thrown up, with a quantity of ropy mucus. Sometimes bile is also ejected; but not often, unless the efforts to throw off the food be laborious and long continued. When the stomach is fairly relieved, the symptoms gradually subside. But in some instances the relief is only partial, and either the same symptoms continue, or others supervene, which will be described. On examination, it will commonly be found, in these cases, that one or more of the teeth is protruding, and the gum tense or inflamed.

XI. This is an affection of which the predisposing cause is the irritation from teething, and the occasional cause food in too great quantity or of improper quality. In some instances the irritation from teething is sufficiently powerful to arrest the digestive process, even when the food has been proper in quantity and quality.

XII. The obvious indications in this case are 1st. to excite the stomach to evacuate itself, when it has not already done this; and 2d. to take off the tension in the gum over the tooth or teeth protruding. The first indication is answered sometimes by warm water; but more certainly by ipecacuanha. The second by dividing the gum in the direction of the teeth.

XIII. The disorder next to be noticed, is sometimes preceded by that already described; more particularly, where the indications laid down (in §XII.) have not been fulfilled either by nature or art. In many cases that ephemeral disease does not precede, or only some of its slighter symptoms are noticed. In the disorder under consideration the dejections become more frequent than in health, and more thin in consistence. In most cases probably some undigested food might be discovered mixed with bile and the other fluids, which are discharged into the intestines. The discharges are often immediately preceded by griping. They are various in colour; often clay-coloured for a short time, frequently yellow, but lighter than in health; less frequently, but not rarely green.

XIV. With these symptoms the child loses his flesh, but not very rapidly. The loss is not evident to transient observers; but to those who know him it is evident that the features and limbs have lost some of the plumpness of health. The child easily gets tired; for a little while he appears in good spirits, but he is not easily amused, and becomes dissatisfied sooner than when he is well. Slight febrile paroxysms are occasionally noticed, more especiasally at night; in consequence of which the patient, who sometimes appears nearly well all day, is very restless and uneasy all night, and is only quiet while lying at the breast, where he can relieve his thirst and soothe his griefs. These paroxysms commonly subside before morning, or at daylight.

xv. The symptoms, which have been described, are sometimes sudden in their access; but more frequently they come on gradually. They vary exceedingly in force, in different subjects. At one time they subside, all of them, or at least those which are most prominent, and the little patients appear to the attendants to be recovering; but shortly, either in consequence of some change in the weather, or, because, the child being better, less care is taken respecting his diet, or, because, his strength being restored, the teeth begin to grow more vigorously, the patient suddenly relapses into his former state. At whatever part of the summer the disease commences, if it be not soon removed, it is prone to continue with occasional remissions till October; terminating very often in the graver affection, which remains to be described.

xvi. This disorder may be termed the diarrhœa of teething children; for subjects of this description very rarely pass through its appropriate season without being affected by it in some measure. It is often sustained even through several weeks, with so much ease, or with injuries which are so gradual, that the parents are not alarmed, and do not employ any remedies for its removal. The opinion, which is derived from great authority, that children cut their teeth most safely when the belly is loose, misleads many. This opinion was not intended to sanction negligence, when the important function of digestion has failed, or is daily failing more and more.

xvii. The explanation of the phenomena of this disease is as follows. By the operation of the causes recited in §v. and vi. the process of digestion is impaired. The stomach labours and fails in the performance of "the first concoction." The matters which pass into the duodenum are crude; they irritate that organ, and they irritate the mouths of the hepatic and pancreatic ducts. By that irritation and by sympathy with the stomach and duodenum the liver and pancreas are brought into unusual action. Their secretory actions are performed more rapidly and less perfectly than in health. Their fluids, of which the bile alone is conspicuous, are vitiated in quality, while they abound in quantity. From these causes the intestinal canal is excited to more frequent evacuations. But the evacuations are

partial; the organs grow irritable; their contents are not allowed to rest while the more fluid parts are absorbed, but they are hurried along in small portions, in consequence of their own acrimony. It sometimes happens also, though not so frequently as in the disorder next to be described, that the more solid portions of the fæces are retained. It is also to be noticed that in some cases, though rarely, the secretion of bile is stopped altogether. This probably happens from a direct sympathy of the liver with the gums, without the mediation of the stomach.

XVIII. The indications of cure in this affection are nearly the same as in that, which will next be described. The remarks on this subject will therefore be more conveniently deferred at present.

XIX. The disorder, which is now to be described, is almost peculiar to teething children during the warm season. It is sometimes, though rarely, seen before the month of August. It grows more frequent and is commonly more severe in September than in August. Though less frequent in October, it yet grows more severe and more difficult of removal. The same perhaps is true of other acute diseases of this season; that as the autumn advances they grow more serious and more dangerous.

XX. This disorder, which is called *cholera infantum*, occurs most commonly among children, who are under the age of eighteen months, and who do not nurse. As the time of weaning has great influence in bringing on this disorder; as indeed it is in most instances to be attributed to an error in this respect, when the disorder is severe; and as there is not any other disease by which we lose so many infants, our remarks on this subject will be fully stated. They are drawn from observation alone, totally unbiassed by any hypothesis; and they have been confirmed by an inquiry into a vast number of cases. It is not however pretended that they will be found universally correct; but the exceptions will be very rare, unless difference of situation varies the result.*

* These observations have been made during more than ten years residence in Boston, and chiefly, though not solely, on the inhabitants of the town. The author is persuaded that they may be corroborated in great measure, though not in their full extent, throughout New England.

xxi. Children are benefited by living principally on the breast for twelve months; their vigour is evidently impaired in almost all cases, when they are nursed less than nine months. The safest period of the year for weaning is from the middle of October to the middle of March; provided they be not weaned under ten months after December, under eleven after January, nor under twelve after February. Children who are weaned at the age of twelve months in March are ordinarily safe; those who are weaned at this age in April are less so, one half of them perhaps suffering severely in the subsequent summer or autumn. In May the danger increases; and in the four subsequent months, if a child of any age be weaned, it will in most cases be very sick before the middle of the October ensuing. The disease does not immediately follow the weaning; though in many cases the diarrhæa of teething children ensues at once. But the instances, in which children who are weaned between May and October, escape severe cholera infantum, are extremely rare indeed.—It must however be noted that in some years the seasons are much more favourable to the health of teething children than in others. It must also be noted that the limits, which have been mentioned, must be varied by particular circumstances. First, the seasons vary two or three weeks in different years. Second, something will depend on the constitution of the child. But we must beware not to place too much reliance on this circumstance, especially on the general appearance, on the fatness, &c. Those children who love meat and relishing food, who digest their food well, who are in perfectly regular habits as to their alvine evacuations, and who sleep well, are the best qualified to bear a deviation from the rules suggested above.

xxii. The cholera infantum is preceded in most cases by the diarrhœa of teething children. In its most exquisite forms it is very clearly distinguished from the diarrhæa; but there are many cases which are intermediate. In some cases the disease commences with the symptoms that belong to the ephemeral affection which has been described. To these are shortly added vomiting and purging, in which great quantities of bile are eva-

cuated, and at intervals sharp pain. In short, this attack is similar to the cholera morbus of adults.

XXIII. In which ever mode the disease has commenced, frequent stools, and more or less frequent vomiting attend it. The appetite is entirely lost, or is irregular, craving only certain articles, and changing in a whimsical manner. Very frequently the child is uneasy for sometime after taking food, if this be not in very small quantity. The food is often thrown up soon after it is taken ; and this happens still more frequently with respect to liquids, for constant thirst is among the symptoms, and the drinks are not only swallowed voraciously, but in too large quantities. Pain in the bowels is a frequent, though not a constant symptom ; but sometimes occurs with great severity. Straining at stool and tenesmus are more frequent, and are often accompanied by nausea and retching.

XXIV. In this disease, although the evacuations from the bowels are frequent, the fæces are in a great measure retained, as in the dysentery of adults ; but not so entirely as is common in this latter disease. In the cholera infantum, small portions of fæcal matter are discharged in almost every stool ; and now and then temporary relief will be afforded by an effort of nature in discharging a larger quantity of fæcal matter. It must, however, be noticed, that, as very little food is digested in this disease, so very little of proper fæces can be evacuated. Lumps or portions of undigested food are very often discharged from the bowels. Of this kind may be reckoned the curds of milk, which have indeed undergone the first change in the stomach, that of coagulation ; but which have not undergone any of the changes necessary to nutrition. Even the undigested food, however, as well as the fæces, is often retained in the intestinal tube, while frequent evacuations are taking place, such as shall be described.

XXV. The matters discharged by stool are principally derived from the chylopoietic viscera themselves ; and with these small portions of fæculent matter are mixed or involved. In consistence the stools are thin and watery, or mucous and adhesive ; in colour sometimes yellow, more frequently either green, or white, or brown ; or these mixed ; with occasionally

XXX. There remain some symptoms, which have not been noticed, or not distinctly. It has been stated that aphthæ often appear, when the patient is in a very advanced stage of the disease. But there is another affection of the mouth, which often commences this disease, and sometimes comes on in the course of it. It is often confounded with aphthæ in description, but is a very distinct affection. By the vulgar it is called canker, a name which they obtained from some of our predecessors. It has been very appropriately termed *ulcuscula oris*. It sometimes commences with little vesicles ; perhaps always, but the epidermis is so tender that they are very soon ruptured. They then present the appearance of slight ulcers, are perfectly circular, except where several run together ; have their bases white, and are surrounded by red lines or rings. These ulcers are seated on the mucous membrane of the tongue, gums, and of every part of the mouth. In some cases that membrane is very much swollen and inflamed in the intermediate spaces ; and then the ulcers, instead of appearing superficial, acquire a depth from the elevation of their borders. The pain and soreness attending this affection are very various, and do not always seem proportioned to the apparent violence of the disease. In all cases, eating occasions pain ; but some children are not at all limited in the quantity of food by this pain, while others can scarcely be persuaded to admit the mildest liquids into their mouths, even when they have an appetite.

XXXI. These little ulcers of the mouth are by no means peculiar to children affected with *cholera infantum*. They very often accompany this disease ; but they also constitute a distinct affection ; are of frequent occurrence with some adults ;* and affect children of all ages, though more frequently while teething. They are seen in every season, and sometimes constitute, for a few weeks, the prevailing complaint among chil-

* In adults this affection is commonly symptomatic. It attends feeble women who have nursed too long ; when it is accompanied by dyspepsia. It is probably occasioned by the dyspepsia ; for it often occurs in the subjects of that disease.

dren, especially in the spring and early summer.* In children they are accompanied by a symptomatic fever, which is attended with great heaviness, and lasts three or four days, and even more. Partly from the severity of the disease, and partly from the want of food, children not only lose strength, but also a vast deal of flesh, by this disease, even when it exists alone.

XXXII. The pain, which attends cholera infantum, has not been distinctly noticed in the preceding remarks. Cases are sometimes seen, in which there is very little or no pain; and this symptom is not a constant attendant in any case. In most instances, however, it is very frequent, and often extremely severe, appearing to arise from spasmodic affections of the stomach or bowels. It is sometimes agonizing in bad cases of the disease. It may here also be mentioned that general affections of both the convulsive and spasmodic kinds, which are called fits, are not uncommon in this disease. They appear to arise from two causes; the irritation of the gums, and irritation of, or pressure on the stomach. Occasionally, convulsions precede death in fatal cases.

XXXIII. The duration of this disease is very various. It is commonly so severe, that some medicines are employed for relief, whether a physician be employed or not; and it would be difficult to find a serious case, in which the operations of nature have not been intentionally controled. A few cases occur every year, in which the attack of the disease is sudden and violent, and death ensues at the end of ten or fourteen days, or even sooner. But commonly, the severe symptoms are removed in a few days, if assistance be given early. When the disease has continued for some time, so that the vigour of the patient is much impaired, it is often obstinate. In all cases, although the recovery has been very perfect, the disposition to the disease continues, after it has once been produced; and relapses will occur, without the greatest precaution, until the middle of October, and even later. The disease not only returns, but it grows more obsti-

* In the spring of 1809, while the measles prevailed in this place, this disease was also very frequent; and in a number of instances the same subjects underwent both diseases. Among these, the affection of the mouth was often the most severe disease.

nate also. A few cases may be seen every autumn, in which by the greatest care the subjects are kept alive through many days, and even for three or four weeks in a state so low, that life is constantly despaired of, and yet health is at length regained.

XXXIV. The following is an enumeration of the most prominent and essential features of Cholera Infantum, and may serve as a definition. Appetite and digestion much impaired; frequent vomiting of food, or of bile, or of mucus, or of all these variously mixed; frequent stools in which fœces are rarely found except in small quantities; emaciation; irregular febrile paroxysms; and occasionally severe abdominal pains; occurring during the period of dentition.

APPEARANCES ON DISSECTION.

XXXV. The following are the appearances, which have been observed in examining a number of cases.* The body is emaciated, often very much. In some cases the abdomen is full and tense, and especially about the region of the liver. The contents of the cranium have not usually been examined. The viscera of the thorax have been found in good order. In the abdomen the liver has sometimes been found very large, so as to occupy two-fifths of that cavity; but this viscus has not presented any other marks of disease, unless, indeed, it may in one or two cases have been rather more firm and solid than natural. The gall-bladder has not had any peculiar appearances. It has been found distended and flaccid, with dark green bile, and also with bile which was much more pale than natural, and comparatively colourless. The spleen and pancreas have not commonly been distinguished by any thing peculiar.

XXXVI. The peritoneal coat of the intestines has in its greater part been found healthy; in some cases altogether so; but in most cases some few spots or portions of it have been discoloured in consequence of a distention of the small vessels going to supply the internal membranes or coats. Also in one or two

* These examinations have been made during several years past in common by Dr. J. C. Warren and myself; and occasionally with the assistance of various professional friends.

cases an inflamed line has appeared on each of two contiguous folds of intestine just above their line of contact. In every case marks of disease have been discovered on the mucous membrane. In the stomach there have usually been observed one or two small spots, of an irregular shape, in which the mucous membrane was red, inclining a little to a purple. The membrane in these places has not been much if at all swollen. The stomach is commonly lined with an adhesive mucus. In the duodenum there have invariably been found one or more spots much larger than in the stomach, in which the mucous membrane has been considerably inflamed, and for the most part swollen. In almost every case such an inflamed patch has been found at the very commencement of the duodenum. In other parts of the small intestines other such inflamed portions of the same membrane have been seen in every case, varying in size. These diseased portions of the mucous membrane have corresponded with the discoloured portions of the peritoneal coat. In the large intestines it is rare to discover marks of disease; but such have sometimes been discovered, and particularly, where dysenteric symptoms had existed.*

XXXVII. The contents of the intestines have consisted of fæculent matter and of mucus, sometimes without bile, but usually coloured either yellow or green by that fluid. These matters are found uniformly spread over the intestine, with some lumps, such as are often discharged in this disease. These lumps consist of small portions of fæcal matter involved in a much larger quantity of hard adhesive mucus, the fæculent matter forming the nucleus of the ball. The substances which have been described are very abundant in quantity, even in cases where it has been thought the patients were kept well evacuated. The intestines are also much distended with wind in some cases; and when the abdomen has been enlarged, it has generally been owing to this cause. Undigested food has not commonly been found; for in the latter stage of life the patients rarely take any nourishment, except in a liquid form.

* In one case the membrane throughout the large intestines shew strong marks of inflammation, and had frequent small ulcerations, resembling the ulcuscula oris or canker spots in the mouth. See § xxx.

To be continued.

ACCOUNT OF BICHAT.

FRANCIS XAVIER BICHAT is one of the most extraordinary men, whom the medical profession of the present age have beheld. He is the only man, perhaps, who can be compared with John Hunter. The latter excelled in original force of mind, the former in method and in the success of his pursuits; for if we consider what Bichat effected in the short space he appeared on the stage, we cannot doubt he would have surpassed Hunter, had he lived as long.

Descended from a father who was a physician, Bichat was early initiated in the art, of which he was to become one of the most brilliant luminaries. Being early familiarized with that language, which is not acquired by others till the moment they have occasion for it; and being accustomed to see the application of precepts, before knowing the precepts themselves, he had all the advantage of that education of example, which insensibly disposes the mind to a particular kind of labour.

He commenced the pursuit of his anatomical *labours* at Lyons. The ardour he exhibited, and the facility with which he subdued the obstacles that present themselves in this *kind of labour*, soon attracted the attention and esteem of his masters. They sometimes associated him with them in the department of instructers, and gave him an opportunity of displaying that methodical mind, which characterized him, when he afterwards taught in his own name.

At this period, anatomy was scarcely cultivated in France, but as a necessary preliminary to surgical studies. This fine science, so important to the physician, and so attractive to the general philosopher, was considered as the mere introduction to the use of the saw and the scalpel; for the names of Petit, Morand, and Frère Côme, were much oftener echoed by the schools, than those of Sydenham, Boerhaave, and Stoll. The celebrated Desault stood at the head of the healing profession. His ardent and active genius attracted the strongest and most enter-

prising spirits to surgery ; and already many of his pupils, full of the fire he breathed, had spread his doctrine through the provinces of France. It happened, also, that at this period public occurrences were more favourable to the art of surgery, than that of medicine. France, internally torn by revolutionary anarchy, and externally assailed by a thousand enemies, required all the aid which surgery could supply, to heal the wounds of her citizens.

Carried on by the general impulse, Bichat devoted himself exclusively to this part of the art of healing. He studied the principles and commenced the practice of it, under M. A. Petit, surgeon of the Hotel-Dieu, at Lyons. But Bichat was destined to appear on a more elevated stage. The revolutionary furies drove him from Lyons, where youth was a crime worthy of death, to Paris, which had become tranquil, and served as an asylum from the murderers of the provinces.

It is not surprising that Bichat should have been so chilled by the horrors he had escaped, as to perform little on his first appearance in Paris. He placed himself under the direction of Desault, the great surgeon of the Hotel-Dieu, with the intention of preparing himself to join the armies. The government becoming more steady, he began to feel his own powers, and soon after an occurrence took place, which raised him at once from the common crowd of pupils to as distinguished a situation as he could desire.

It was customary in the school of Desault for certain chosen pupils to note the public lecture, and afterwards to write it out in the form of an abstract. This abstract was read before the lecture of the following day in presence of the second surgeon and the pupils. Thus they had an opportunity of hearing a second time the precepts they were to practise on; and the inattentive might repair the loss from their previous negligence. One day Desault had descanted a long time on the fracture of the clavicle, and shewn the utility of his peculiar bandage, which has been since adopted in France and in this country. The pupil, whose duty it was to take the notes, happening to be absent, Bichat offered to supply his place. When his abstract was read on the day following, it produced the most lively impression. The purity of his style, the precision and clearness of his

ideas, the scrupulous exactness of his repetition, displayed the talent of a professor, rather than of a pupil. He was listened to with extraordinary silence, and left the theatre loaded with eulogies, and covered with the reiterated applauses of his fellow students.

As soon as the second surgeon, Manoury, had related this occurrence to Desault, he was impatient to see the young man; and from his first conversations he judged so well of what he might one day become, that he did not hesitate to offer him his house, and the treatment of a son; for he determined to make him the successor of his place and reputation.

From this moment Bichat was devoted to such constant labour, as that the variety of his occupations was the only relaxation he allowed himself. Besides the duty of surgeon to the out-patients, which he performed at the Hotel-Dieu, he was charged with visiting every day a part of the patients of Desault abroad; he accompanied him every where to assist in his operations; it was his duty to answer a great many letters of consultation sent from the departments; and when the day had been consumed in labours such as these, a part of the night also was spent in aiding the researches of Desault about various points of surgery. This illustrious practitioner had undertaken a very extensive course on diseases of the bones, in the latter part of his life. Before each lecture, it was necessary to present in writing a methodical exposition of the doctrine of different authors, on the subject to be discussed, from Hippocrates to the present day. Bichat was charged with this labour, superadded to so many others, and acquitted himself with as perfect exactness as if he had consecrated to it the whole of his time.

Although Desault demanded a great deal, Bichat performed more than he demanded. He found moments of liberty in the midst of so many pursuits, and these he employed in improving his anatomical knowledge, and in conversing with his friends on some surgical or physiological topic. By this incessant industry he soon acquired a mass of information, which enabled him to support himself in the situation he occupied, when Desault died. The latter was thought to have fallen a victim to poison, during his attendance on the Dauphin, as well as his

friends Chopart, and Doublet, both of whom followed him to the grave in the space of four days, after having in their turn been attendants of the unfortunate prince. This story of the death of Desault was contradicted by Bichat; and the dissection of the body was published to silence the voice of rumour; but without effect.

After pouring out the tears of gratitude and friendship, and paying a tribute worthy of his memory in the fourth volume of the Journal of Surgery, which he published in the name of Desault, Bichat thought only of commencing a more extensive and brilliant career. He soon *commenced* a course of physiological and anatomical lectures, and afterward a course on the operations of surgery. In the year 1797 he laid the foundation for greater works by his treatise on the synovial membranes, which was a prelude to his important *labours* on the membranes in general.

The severity of his *labours* gradually undermined his health. Unmoved by the dangers which threatened him, he continued his occupations till a bleeding from the lungs arrested his course. While confined during a long period to bed he suffered less from the pains of the disease than from the necessity it imposed on him of ceasing to pursue his favorite objects of study. No sooner was his health re-established than he *pursued* his course with more ardour than ever. He forgot the dangers he had seen, and consented to incur still greater, provided he attained the point of fame which he saw within his reach. In the midst of excessive labours in the schools of anatomy and physiology, he employed the greater part of the nights in preparing the surgical works of Desault, which he afterwards presented to the world as his last homage to his deceased master.

Bichat's great aim, however, was the improvement of physiology. He began in his lectures to unfold his peculiar views of the classification of membranes. The first idea of this classification was derived from the reflections in M. Pinel's excellent work the *Nosographie philosophique*; but he rendered it his own by the numerous facts he had discovered, and especially by the distinction of fibrous membranes, which M. Pinel had not pointed out.

These novel considerations, which formed a complete body of doctrine respecting the membranes, were, as yet, only explained in his lectures. Two memoirs were presented to the public for the first time, in a volume of the *Recueil periodique de la Societé medicale d'émulation*; to these he added three others on important points in surgery. Finally, he published in this work a memoir, in which he gave the first view of his distinction of the *two lives*, which he then founded on the external forms of organs, but which was afterwards to be supported by so many proofs. Constantly enlarging his views as he proceeded, he next published his treatise on the membranes, which no sooner appeared than it was regarded as an elementary and classical work.

He now gave distinct courses of physiology, in which he explained the division of the phænomena of life more fully than he had done in his memoir. It is said that this doctrine was well received, and soon established in France. Envy, however, attacked it as well as its author. The reputation and success of Bichat were too great to be supported by the little great men of the day. Bichat despised their attempts to injure him, and did not deign to reply to the injurious publications that were issued. Public opinion avenged him sufficiently, and the crowd of pupils which filled his theatre, formed the most victorious answer to those who attempted to lessen his reputation while they availed themselves of his labours.

His peculiar principles were soon made known to every body by his *Recherches physiologiques sur la vie et la mort*, which has been translated into English by Dr. Watkins, of Baltimore. This work, published in 1799, is divided into two very distinct parts. The first part, *on life*, contains an account of his physiological opinions. It is defective in some respects, though highly meritorious on the whole. The second part is a perfect model of physiological inquiry. An imitation of it would advance the science of physiology with the most rapid strides towards perfection; but, alas! it can be imitated only by men whose candour and industry are equal to those of Bichat. In this second part Bichat was continually 'armed with the flambeau of experiment.' By this he discovered the real mode of connection between respiration and life. He proved by numerous and posi-

tive facts, that the black or venous blood, as well as the red or arterial, would excite the contraction of the heart on entering its cavities; that on the contrary the red blood alone conveyed into the texture of organs the excitement necessary to maintain life; that, of course, if the defect of respiration was the cause of death, it was not because the heart ceased to act on the impure blood, but because the blood, though pushed on by the heart, was not capable of exciting the organs it entered. His principal experiments were made before a great number of pupils, and repeated in presence of Messrs. Hallé and Duméril. Some idea may be formed of the number of his experiments from his statement, that he devoted upwards of one hundred days to observations, in which the carotid artery was exposed. Those designed to illustrate the connection between the brain and heart, have been lately repeated in England, and found to be perfectly correct, as will be shewn in another part of this work.

The idea of bringing together by common characters the *membranous* textures that serve to form particular organs, would very naturally generalize and apply itself to the other primitive textures that enter into the composition of organs in general. Bichat undertook to make this application, and he completed this immense labour with his usual success; commencing by an explanation of his opinions in a physiological course. We shall not attempt to describe the nature and extent of this labour at present; nor can we do more than mention another he afterwards undertook, which consisted in a more particular anatomical description. The latter was not completed by Bichat.

The same idea, which had directed him in his researches on the healthy body, served for the guide of his pathological inquiries. Having examined the organic textures in a sound state, he undertook to observe them in a state of disease. This new labour was much more extensive than the first, considering the variety of affections to which each texture is liable. It was necessary to multiply the examination of dead bodies; it was even necessary to have attended their diseases in order to draw from anatomical inspection all the advantages it presented. Bichat accomplished both of these with that extraordinary acti-

vity which he carried into every thing he undertook. In a few months he opened upwards of six hundred bodies either at the Hotel-Dieu, or elsewhere, and at the same time attended all the remarkable diseases in that great hospital. Soon he communicated in a course of lectures the information he had acquired from these sources; and those who had admired him when following the traces of Haller, were astonished to see him pursue with equal success the footsteps of Morgagni. To him is to be attributed the first correct knowledge at least in France, of the affections of the peritoneum. He shewed that each primitive texture had a particular mode of disease, as well as a particular character of vitality, and that even in the intestines one texture might be diseased while the others are healthy.

Finally; the materia medica occupied the last period, we may say, even the last moments of the life of Bichat. He had been long impressed with the confusion and uncertainty of this science, and he thought that if cultivated with method, and according to settled principles, it might be rendered as perfect as the other branches of the art of healing. He began to examine the action of medicinal substances upon the different organic systems, both as to their direct and their sympathetic effects. This demanded numerous observations. These he made at the Hotel-Dieu, of which he was just appointed physician. More than forty pupils assisted him in this labour which he directed himself; and he daily in his lecture gave an account of the success of his researches.

When visiting the hospital he inhaled from the very mouths of the patients the pestilential vapour of typhoid fevers, with a view of distinguishing them by their peculiar odour. Nothing was so disgusting as to repel his approaches when he was animated with the hope of acquiring a new fact.

It was easy to foresee that a man so indefatigable and so careless of reserving his strength would not extend his career very far; and this was predicted to him from various quarters. The frequent gastric affections he had for some time experienced, also admonished him to moderate the ardour of his exertions. It was useless. In the greatest heats of summer he continually

examined anatomical pieces, which he had submitted to maceration for his experiments, and exposed himself with the most obstinate courage to their infectious exhalations. The derangement of the nervous system, produced by a fall at the Hotel-Dieu, served as the exciting cause of his disease. The day after his attack he persisted in visiting his patients, and fainted from the fatigue, which was the consequence. Immediately, the formidable train of phenomena of ataxic fever presented themselves, and after remaining for some time in a state of insensibility he expired on the fourteenth day of his disease.

Few men of science have have been so much regretted. The whole school of medicine was affected by his loss, and more than five hundred pupils honoured by their presence the funeral of him who had united their love and respect.

Bonaparte ordered that a monument should be placed in the Hotel-Dieu to transmit to posterity in the names of Desault and Bichat the memory of two men, remarkable by their extraordinary talents and their premature death.

"Europe will hardly believe," said the philosophic Hallé, "that before the age of thirty, seizing with the hand of a master those ideas, which some men of genius had barely touched, Bichat laid the foundations for a new anatomy and a new physiology. The last pupil, which the once famous school of Leyden produced, the celebrated Sandifort, has said to one of us (Bichat lived at that time! but this prediction was never to be accomplished): '*in six years your Bichat will have surpassed our Boerhaave.*' Thus speak strangers of him. But we, we shall say that Bichat was also the best of men, that never did slander blacken his lips, that no laurel was withered by his hands, and that, modest without effort, he never spake but of what remained for him to perform. No, it is impossible that such a man should have had enemies, it is impossible that he should have had envious and jealous calumniators."

CASES OF APOPLEXY WITH DISSECTIONS.

BY JOHN C. WARREN, M. D.

Every fact in pathological anatomy is worthy of preservation. Every morbid appearance, which has not been noticed, or at least not generally known, should be recorded and given to the world, especially if it serve to illustrate obscure doctrines and points of practice. The treatment of apoplexy in its first stage is a fair subject for the application of these remarks; as it has been a source of division and discussion among physicians ever since the days of Van Helmont. This learned man, together with Sydenham, Fothergill, and Lieutaud, have sanctioned the employment of emetics; while others have condemned these remedies, as highly dangerous; and recommended, in opposition to them, the practice of blood-letting. Among the latter we find such high authorities, as those of Valsalva and Morgagni, Portal, Cullen, and Mr. John Bell. Portal, whose name will scarcely find a superior among physicians of the present age, gives his opinion in the following very strong expressions. " Many facts have proved to me that the practice of those physicians, who order an emetic instead of bleeding is as murderous, as the theory on which it is founded, is erroneous." This writer and others have multiplied cases and dissections with the hope of establishing their favourite doctrines, or at least of elucidating the pathology of this disease. It has, however, strangely happened that while the organs principally concerned, in the opinion of all, have been the brain and stomach, the former has been examined with the greatest attention, while the latter has been entirely neglected. We have not been able to discover that the appearance of the stomach in patients, who had died of apoplexy, has been carefully observed by any of the writers on this disease: on the contrary, it is found that most of them have neglected even to name this organ in their descriptions.

The object of this paper is principally to state a fact in pathological anatomy, which if it do not serve to fix unsettled opin-

ions, may be of some utility in directing our attention to a part not yet sufficiently examined.

CASE I.

Major L. a gentleman of moderate stature, with a short thick neck, enjoyed good health till he had reached the age of sixty. At that period he had some slight attacks of indigestion, and two or three fits of faintness. At last, while apparently in good health, he was seized with a fit of apoplexy. He had dined about half an hour before on what are usually called pancakes, and swallowed a large quantity of cider, without other solid or liquid food. He afterward walked to the place of his daily occupations, where he sat down to repose himself a few minutes; then rising to go to his desk, he suddenly fell, and expired immediately. In a few minutes, when I saw him, there was not any pulse, nor the slightest appearance of life remaining.

DISSECTION.

In about twenty hours after death the body was examined in presence of a number of physicians. The face, neck, and upper part of the trunk, were of a purple colour. When the scalp was cut, a great quantity of venous blood streamed from the wound. The cranium being opened, the dura mater was seen of a darker colour than usual. No sooner was this membrane raised, than we were struck with the conspicuous appearance of the veins on the surface of the brain. Not only were the large vessels filled, but the most minute branches were injected with blood. This substance was every where fluid, for the vessels were no sooner punctured than they began to empty themselves of their contents. The brain presented no other remarkable appearance, if we except that of a great number of bloody points in the medullary substance.

We opened the chest, and found the lungs to be free from blood and of a healthy aspect. The little vessels of the heart were more evident than usual. Opposite to this organ two of the ribs were fractured from a blow received in falling; and the

cellular membrane exhibited an extravasation of blood from the same cause. The cavities of the heart, and even the first portion of the aorta, were full of fluid black blood.

As this gentleman had died so very suddenly immediately after a full meal, we were anxious to examine the condition of the stomach. Therefore, after observing that the other abdominal viscera had a healthy appearance, I tied the two orifices, and removed the organ, that we might inspect it as carefully as possible. Its exterior exhibited nothing remarkable, except an unusual appearance of small vessels in some parts of the peritoneal coat. On opening the cavity we were astonished at seeing the quantity of food it contained. The mass had a slightly acid odour, nearly resembling that of the drink swallowed. No perceptible change had been effected on this mass by the action of the gastric powers. This being removed, we examined the internal or mucous coat. *The greater part of this coat was of as deep a red colour, as would accompany a high degree of inflammation.* The redness was greatest in the pyloric portion of the stomach, where it was very deep and uniform.

CASE II.

The Reverend President W. enjoyed a good degree of health till he had nearly attained the age of forty. He then began to be disturbed with a derangement, which terminated in an enlargement, of the prostate gland; and was occasionally affected with slight attacks of indigestion. His habits of living were those of studious and sedentary men, except during the last two years of his life, when, by a change in his situation, these habits were somewhat altered. A tall and ample frame, with a serene countenance, grave and regular movements, proclaimed a philosophic tranquillity of mind, which was not often interrupted by disturbance in the circulating system.

It seems that he had dined profusely on the paste of a certain kind of meat pie, which it is proper to remark nearly resembled the species of food taken by the gentleman, who was the subject of CASE I. He remained in his house during the after-

noon; and at about six o'clock, three hours after dinner, he was engaged in conversation with a gentleman of the college on some affair of no great importance, and not of a nature to excite any strong emotion of mind. Suddenly he complained of want of air. The window being thrown open, he attempted to reach it, but was compelled to sink into a chair, and placing his hand on the head, he fell on one side, became insensible, and soon began to breathe with snoring of apoplexy. Medicines were administered, and attempts were made to bleed him, without success, and he expired in an hour. His countenance immediately became livid and swelled, so as to present an unusual and even frightful appearance.

DISSECTION.

At eleven o'clock on the following morning we examined the body. In the first place it was observed that the face was less turgid than on the preceding evening, for the blood had gravitated from the capillaries of the face to more dependent parts. The skin was still livid however in the face, neck, breast, and all the upper parts of the body. The superficial veins about the neck and breast were very apparent, and discharged a great quantity of black blood wherever they were cut.

The veins on the surface of the brain were moderately distended with blood; but nothing very remarkable was seen in this organ till we cut deep into the left hemisphere. Below and on the left side of the ventricle was discovered the immediate cause of death; a large coagulum of black blood discharged probably from a considerable branch of the arteria callosa; for we distinctly saw the branches of this artery running toward the coagulum, and could almost fix on one as the fatal source of the effused fluid.

The substance of the heart, and also that of the voluntary muscles, was quite tender and very livid. All the cavities of the heart contained black blood in a fluid state. The lungs were sound, and free from any remarkable accumulation of this fluid.

The abdominal organs were generally in a healthy condition, as to their organization, but of a livid appearance wherever they

are naturally coloured by blood. The stomach was very full. Its contents consisted of a brownish, nearly homogeneous mass, destitute of any peculiar appearance or smell. The veins were peculiarly distinct, as seen through the outer or serous-coat. The internal or mucous coat had an *extremely deep red colour*, especially near the pyloric orifice, where this appearance was most equally diffused. The parts most strongly coloured were of a purplish hue, and more tender than the rest of the organ.

This dissection was performed in presence of Dr. Warren, sen. Dr. Jennison, Dr. Jackson, and others.

In these two cases, and these are the only cases of apoplexy in which I have yet had an opportunity of examining all the cavities, we find, besides the morbid appearances that are usual, a very remarkable state of the stomach. In order to give due weight to this phenomenon we ought to consider, first, that it must have occurred very suddenly, and of course denotes a powerful impression on the organ; second, that the appearance of inflamed surfaces is materially changed after death, and that the red colour diminishes, at least when the inflammation has not lasted long. It is therefore not to be doubted that the redness had been greater during life, than when the subject was examined.

Apoplexy is commonly considered a disease of the brain, in which death is produced by pressure on that organ in one of three ways. 1st. By the rupture of a vessel, and the consequent discharge of blood on the surface, or in the substance of the brain. 2d. By the fulness, or over distension of the cerebral vessels with blood. 3d. By an effusion of the serous part of the blood into some portion of the brain.

Is it probable that the stomach ever has an influence on the brain in producing this disease? Mr. John Bell answers this question in a very decided manner. He tells us "the stomach never affects the head."* He gives a pathetic history of a friend of his, who "died of the disorder of the head, which is so often and so fatally ascribed to the stomach;" for, asks he,

* Principles of Surgery, vol. 2. p. 532.

by what mechanism or what nervous sympathy could the stomach materially affect the head? It is generally a disorder of the brain itself that affects the stomach with sickness, the senses with confusion, the heart with palpitation, the limbs with debility, and the whole frame with tremours: the indescribable and complicated sensations, which we cruelly call nervous, as if they proceeded from a disordered and ill regulated imagination, are real and physical affections of the most important organ of the body. When at any time the stomach performs its functions imperfectly, and acidities are generated, digestion is imperfect, and the whole body is debilitated, but no hypochondriasism belongs to this form of stomach disorder; it does not affect the head."

When a popular author, like Mr. Bell, whose opinions are delivered in an imposing style, thus confounds truth with error, it becomes a duty to investigate his assertions, and separate, if possible, those which are worthy of confidence from others fraught with mistake and mischief. This is particularly important when a numerous and interesting class of disorders is concerned. It is not for us, however, to examine all the errors that are included in the preceding quotation. We shall venture to meddle with what relates alone to the fatal disease which we have exemplified above; but if our reasonings and inferences are correct, they may be applied to an extensive and important set of complaints.

"*By what mechanism, or what nervous sympathy could the stomach affect the head?*" This is rather an extraordinary question for a great anatomist. The stomach is partly supplied with nerves from the great ganglia of the abdomen. If it had been wholly furnished from this source, or even from the proper intercostals of the spinal marrow, the question would have excited less surprise; but this is not the case. The great nerve of the stomach is the par vagum. This nerve comes so directly from the brain to the stomach, that no nervous connection between parts can be more intimate than that between these two organs. The par vagum after quitting the brain runs down the neck, penetrates the thorax, and having given some nervous filaments

to the heart and lungs, spreads itself on the side of the œsophagus, along which it goes straight to the stomach; the pyloric orifice is encircled with a network of its nerves, from which run innumerable filaments into the organ, and at last some branches form a connection with the cœliac ganglion. So that, if we believe nervous sympathy to be dependent on nervous connection, no parts are better fitted to sympathize than the brain and stomach; and if we consider sympathy to be independent of nervous connection, the stomach may sympathize with the brain, as well as any other organ. The influence of the par vagum on the stomach is capable of being shown by experiment. If this nerve be divided in the thorax, the functions of the stomach will be suspended. There does not therefore seem to be any great difficulty in explaining "by what nervous sympathy the stomach may affect the head."*

A sufficient number of *pathological* facts might be adduced to show the influence of the stomach on the brain. The common sick headach presents one of the most evident examples. In this disorder the brain is severely affected, as is shewn by the intense pain, and the derangement of the external senses. The eyes flash, the ears ring, the tongue is benumbed, the touch is blunted. During all this tumult, the stomach labours under severe oppression. An emetic is opportunely administered, perhaps by nature unassisted, and this organ relieved of its offensive contents. The pain of the head soon after ceases; the senses gradually return, and the brain clears, to use the expression of a patient, like the sky after a sudden storm. But if the emetic has been unwisely rejected, the paroxysm will be longer, and often leave the patient dull and uncomfortable. Persons labouring under indigestion sometimes experience sensations in the head, which they have not been accustomed to feel. A lady who was dreadfully affected with this disorder, while she was growing worse began to complain of strange feelings in her head, which inspired her with the fear of becoming insane. The symptoms of dyspepsia increasing, she was at last attacked with terrible fits of epilepsy, that continued to occur during the

* Foderé, Physiologie positive.

space of some weeks. When she began to recover from the indigestion, the fits went off, and have never re-appeared. A few grains of rotten egg, taken into the stomach, have been known to produce vertigo, confusion of thought, and insensibility, which symptoms were relieved by evacuating the stomach. Whether the action on the nervous system of certain vegetable poisons taken into the stomach, can be fairly adduced in support of the influence exercised by the stomach on the brain, may possibly admit of doubt. It appears by the experiments of M. Delisle, that four or five grains of the upas tieuté, an East Indian poison, produced a tetanus, or spasmodic affection of the muscles, in seven minutes after being forced into the stomach of a dog.* Is it probable that this substance could be carried into the blood by the absorbent vessels, in so short a time? If not, it must have acted by means of the sympathy of the brain with the stomach.

* Since writing these remarks I have met with some recent experiments of Mr. Brodie, which strongly support the opinion, that these powerful poisons operate on the brain, through the medium of the nervous system; or at least render it improbable that the substance is absorbed and carried by the blood vessels to the brain.

(To be continued.)

A CONCISE VIEW OF THE RESULTS OF DR. DAVY'S LATE ELECTRO-CHEMICAL RESEARCHES.

No apology, we presume, will be required for laying before our readers an abstract of the discoveries and profound researches of this celebrated chemist. Notwithstanding the novelty of his investigations, the variety and importance of his experiments, and the interest with which they have been viewed by the chemists and philosophers of Europe, there are but few among us, who have acquired any certain information on the mode in which they were conducted, or any distinct idea of their results. Although the progress of Dr. Davy has been made known to us through the media of the different European journals of philosophy, and partial accounts have been occasionally published in more than one of our own periodical works ; yet a knowledge of the result of his labours is still confined to a narrow circle ; for, with one exception,* no general view has yet been given of the nature of his operations, nor the influence they are supposed to have in altering the features of chemical science. They are, we believe, but little known in this section of the United States ; and we have flattered ourselves, therefore, that a succinct account of the effects, which have resulted from the application of a new power to the purposes of chemical analysis, would prove neither useless nor uninteresting.

No chemist, perhaps, has effected, in so short a period, more brilliant discoveries, nor pursued with more ardour and ultimate success, the fortunate career which his own sagacity has opened to him, than Dr. Davy. His character as a philosopher, however, is founded less on the mere discovery of new elements of matter, to which chance might have directed him, than on the extent, the variety, and the delicacy of his experiments, the precision and justness of his reasoning, and the modesty with which he advances opinions as theoretical, that with many

* Henry's Chemistry, 2d Amer. ed. Notes.

might be considered as legitimate deductions. If we occasionally meet with observations, announced with the warmth of a sanguine mind, and with conjectures delivered with an emphasis which would lead us to suspect a disposition to generalize from a partial view of a subject, these are comparatively rare, and it is probable that few individuals could have pursued the same brilliant course with more caution, or less danger of being deluded from the right path, by the false glare of speculative philosophy. Although the influence of his researches in the science of chemistry, so far as they have yet extended, cannot be put in competition with that of one or two of the principles resulting from the investigations of Lavoisier and his immediate successors; yet when we consider that these were successively unfolded by the combined efforts of the greatest philosophers of the age, and compare what their united powers produced with what has been effected in a shorter time by the unaided powers of Dr. Davy, we can have little hesitation in raising him to the highest rank among the modern chemists.

The reputation of this gentleman was established during his connection with the late Dr. Beddoes in the pneumatic institution at Bristol, by the publication of his "Researches, chemical and philosophical." He was afterward elevated to the station of lecturer at the Royal Institution in Albemarle street, London. Here a wider field was opened for his active mind; and by the fortunate application of voltaic electricity in a state of high intensity, as a chemical agent, he succeeded in decomposing a variety of important compounds, which before his time were considered as simple, or merely conjectured from analogy, or from imperfect experiment, to consist of more than one principle. From the surprising effects produced by this power, he has been gradually led to make its action a subject of research, and has now been employed for five or six years almost exclusively in ascertaining its influence in developing the true composition of bodies.

The researches of Dr. Davy into the effects produced by electricity on water, on its agency in the decomposition of various compounds, on the transfer of certain of the constituent parts of bodies, and on the relations between the electrical energies

of bodies, and their chemical affinities, detailed in the Bakerian lecture for 1806, though curious and interesting, we shall pass over in silence, and commence with the brilliant era of the decomposition of the fixed alkalies.*

* It may perhaps be useful to state, in a few words, the general mode by which these decompositions were effected. In his previous experiments, Dr. Davy had proved that "the powers of electrical decomposition were proportional to the strength of the opposite electricities in the circuit; and to the conducting power and degree of concentration of the materials employed." Hence the number of plates in the battery was considerably augmented; but he observes that all the experiments detailed in the Bakerian lectures, in which he describes the decomposition of the fixed alkalies and alkaline earths, may be repeated by means of a voltaic battery, containing from one hundred to one hundred and fifty double plates of four or six inches diameter.

In many of his experiments, however, this chemist employed from 250 to 500 plates; and in those very recently made, he availed himself of the noble battery lately put up at the Royal Institution, and composed of several thousand plates, the intensity of the action of which is such as to produce a column of flame of some inches, when the wires from the different ends are within a certain distance of each other.

Potash was decomposed as follows.

"A small piece of pure potash, which had been exposed to the air for a few seconds, so as to give conducting power to the surface, was placed on an insulated disc of platina, connected with the negative end of the battery of the power of 250 of 6 and 4, in a state of intense activity; and a platina wire communicating with the positive end was brought in contact with the upper surface of the alkali; the whole apparatus was in the open atmosphere."

By this arrangement the potash is decomposed, and its basis will appear in the form of small distinct globules, exhibiting a metallic lustre. As this substance possesses a strong attraction for oxygen, and on exposure to the air combines with it and returns to the state of potash, it has been found necessary, when it is wished to preserve this basis, to conduct the process under the surface of oil of naptha, in which it floats without being changed in appearance.

The fortunate discovery of M. M. Gay Lussac and Thenard, that the decomposition of potash may be effected by iron, aided by a high temperature, has now rendered an expensive voltaic apparatus unnecessary. The metal, as observed by Dr. Davy, may be obtained in infinitely larger quantities, and more uniform in quality; and although it is supposed to contain iron, yet the proportion is so minute, that it can have but little effect in modifying its properties, or altering its relations. The general mode by

DECOMPOSITION OF THE FIXED ALKALIES.

I. POTASH.

* Potash is a compound substance, consisting of a base and of oxygen, in the proportion of six parts of the former and one of the latter. The basis of potash, which is now recognized by the name of potassium, at the temperature of 60° of Fah. appears in the form of small globules, possessing the opacity, metallic lustre, and general appearance, of quicksilver.

At this temperature it is imperfectly fluid, more liquid at 70° ; and at 100° its fluidity is perfect, so that the globules, when applied to each other, readily unite and form one mass. When the temperature is diminished to 50°, it becomes soft and malleable, and its lustre is equal to that of polished silver. At the 32° of Fah. it acquires hardness and brittleness ; and when broken into fragments, exhibits a crystalline texture, which, examined by the microscope, seems composed of beautiful facets of a perfect whiteness and high metallic splendour. At a temperature a little below a red heat, it passes into vapour, and in close vessels is condensed without alteration.

It is a perfect conductor of heat and electricity. Notwithstanding its resemblance in physical properties to the metals, it differs from them essentially in its specific gravity. It swims on the surface of naptha, of the specific gravity of .861, and does not sink in this fluid when double distilled of the specific weight of .77. Compared with water, it is as 6 to 10, and it is thus considered by Dr. Davy, as about 0.6.

CHEMICAL RELATIONS.

The chemical relations of this extraordinary substance, are more singular than its physical properties.

which this decomposition is produced, is to pass pure potash in a fluid state over the surface of clean turnings of iron, heated to whiteness ; the affinity of the metal for oxygen, assisted by the intense heat, is sufficient to separate the constituent parts of the potash, its oxygen combining with the iron, and its base being volatilized to the upper portion of the apparatus.

* Bakerian Lecture, read November, 1807. Phil. Trans. for 1808.

When exposed to the air, a white crust is soon formed on its surface, which deliquesces; the water thus absorbed is decomposed, a farther oxidizement takes place, and the whole is converted into a saturated solution of potash.

It combines slowly with oxygen, without flame, at all temperatures below its point of vaporization; but at that temperature, the combination is rapid, accompanied with an intense heat and a brilliant white light.

An oxide of potassium with a smaller proportion of oxygen may be formed by fusing dry potash and its basis together under proper circumstances. The compound when fluid is of a red brown colour, and when solid of a dark grey hue.

Introduced into oxy-muriatic acid, it inflames spontaneously with a bright red light, and muriate of potash is produced.

It is soluble in hydrogen gas, and renders that air spontaneously inflammable, its combustion in the atmosphere being frequently accompanied with a beautiful ring or coronet of smoke, resembling that produced by the inflammation of phosphuretted hydrogen gas. This property, however, is lost by cooling, the potassium being deposited.

When a globule is brought into contact with water, that fluid is instantly decomposed, an explosion takes place, accompanied with a brilliant rose-coloured flame, hydrogen gas is disengaged, and the result is a solution of pure potash.

Placed upon ice, it burns with a bright flame, and forms a deep hole, which is found filled with an alkaline solution.

When thrown into alcohol and ether, it decomposes the small quantity of water they contain, and exhibits the same phenomena as with simple water. As potash is insoluble in ether, the alkali resulting from this action renders that fluid white and turbid.

It inflames in sulphuric and nitric acids, sulphur being disengaged; and sulphate of potash formed in the former, and nitric oxide gas and nitrate of potash in the latter.

The basis of potash readily enters into union with sulphur and phosphorus, producing compounds analogous to the sulphurets and phosphurets of the other metals, and decomposable by air and water.

Potassium unites with quicksilver, and the properties of the amalgam are varied according to the relative proportions of the two metals. When the former amounts to one thirtieth of the weight of the latter, the compound is hard and brittle. It is decomposed by exposure to the air, and more rapidly by immersion in water, potash being formed, and the quicksilver being disengaged. The fluid amalgam dissolves most of the other metals, and the quicksilver in this state is capable of acting even on iron and platina.

Potassium forms alloys with gold, silver, and copper, and readily combines with the compound fusible alloy. It reduces the oxides of the other metals, by combining with their oxygen; and its action on naptha, concrete and volatile oils, wax, and camphor, is proportional to the oxygen they contain.

It decomposes and corrodes flint and green glass with great rapidity, a fact which may be explained partly on the great attraction of the potassium for the oxygen of the oxides employed in their composition, and partly on the affinity of pure potash for silex.

II. SODA.

The basis of soda, to which has been applied the name of sodium, is a solid substance at the common temperature of the air. It is white, opake, and of the lustre and general appearance of silver. It is soft, and exceedingly malleable. When pressed upon by a platina blade, with a small force, it spreads into thin leaves, and globules of one tenth or one twelfth of an inch in diameter, are easily spread over a surface of one quarter of an inch. It appears to possess the property of welding. Its specific gravity is .9348.

Sodium, equally with potassium, is a perfect conductor of heat and electricity. When exposed to heat, it begins to soften at the temperature of 120° of Fah. and is perfectly fluid at that of 180°. It is not volatile at a temperature sufficiently high to melt plate glass.

CHEMICAL RELATIONS.

When exposed to the atmosphere, it immediately becomes tarnished, and by degrees covered with a white crust of pure

soda, which deliquesces much more slowly than the crust on the basis of potash.

At the common temperatures, it combines slowly with oxygen without light ; and when heated, the rapidity of combination is proportionably increased; but it burns with flame only at a degree of heat near to that of ignition. In oxygen gas the flame is white, accompanied with numerous brilliant sparks ; in atmospheric air, it is of the colour of that proceeding from burning charcoal.

It inflames spontaneously in oxy-muriatic acid gas, and muriate of soda is formed.

When thrown into water it produces no luminous appearance, but violently effervesces with a hissing noise, and hydrogen gas is liberated. In hot water the action is still more violent. The result is a solution of pure soda.

It operates on alcohol, ether, oils, the inflammable substances and the metals, nearly in the same manner as potassium.

The amalgam of quicksilver and sodium seems to form triple compounds with other metals ; and it is supposed by Dr. Davy, that the former still continued in combination with iron and platina, after the latter had united with oxygen, and been separated by deliquescence.

The results of Dr. Davy's analytical experiments on soda, have shown that it is a compound of 7 parts of sodium and 2 parts of oxygen.

DECOMPOSITION OF THE VOLATILE ALKALI, OR AMMONIA.

Dr. Davy has shown that ammoniacal gas, which the analytical experiments of Berthollet had decided to be a binary combination of nitrogen and hydrogen, is a triple compound of these substances with 7 or 8 parts in 100 of oxygen.

" Oxygen then may be considered as existing, and as forming an element in all the true alkalies ; and the principle of acidity of the French nomenclature might now likewise be called the principle of alkalescence."

Dr. Davy then proceeds to observe, that " from analogy it is reasonable to conclude that the alkaline earths are compounds of a similar nature to the fixed alkalies, peculiar highly combusti-

ble metallic bodies, united with oxygen;" and he details some experiments on these substances, which appear to favour this conclusion. The Bakerian Lecture for 1807, he terminates by observing, that—

"In the electrical circuit we have a regular series of powers of decomposition, from an intensity of action so feeble as scarcely to destroy the weakest affinity existing between the parts of a saline neutral compound, to one sufficiently energetic to separate elements in the strongest degree of union, in bodies undecomposable under other circumstances.

"When the powers are feeble, acids and alkalies, and acids and metallic oxides, merely separate from each other; when they are increased to a certain degree, the common metallic oxides and the compound acids are decomposed; and by means still more exalted, the alkalies yield their elements; and as far as our knowledge of the composition of bodies extends, all substances attracted by positive electricity are oxygen, or such as contain oxygen in excess; and all that are attracted by negative electricity are pure combustibles, or such as consist chiefly of combustible matter.

"An immense variety of objects of research is presented in the powers and affinities of the new metals produced from the alkalies.

"In themselves they will undoubtedly prove powerful agents for analysis; and having an affinity for oxygen stronger than any other known substances, they may possibly supersede the application of electricity to some of the undecomposed bodies."

EARTHS.

In the Bakerian Lecture for 1808, Dr. Davy details the modes by which he attempted the reduction of the earths, and concludes with some observations on the nature and properties of the amalgam of ammonia.

His attempts to obtain the bases of these substances were not followed by such positive results as rewarded his labours on the pure alkalies; but the experiments were sufficient to show, what in fact had long before been conjectured, that they are compound bodies, and owe their properties to the oxygenize-

ment of bases bearing a very striking analogy to those of potash and soda.

We shall pass over the numerous experiments instituted for this purpose, which gave no very satisfactory results, and confine ourselves to those subsequently made on the suggestion of Mess. Pontin and Berzelius, of Stockholm, "who had succeeded in decomposing barytes and lime by negatively electrifying quicksilver in contact with them, and in this way obtained amalgams of the metals of these earths."

Dr. Davy repeated this experiment with complete success. He formed an amalgam, afterwards separated the quicksilver by distillation in close vessels, and thus obtained the basis of the earths, *nearly* in a state of purity; still, however, retaining a small proportion of the former, from which it was found difficult entirely to free them.

BARYTES.

The basis of this earth, to which has been applied the name of Barium, appeared as a white metal, of the colour of silver. It was fixed at all common temperatures, but became fluid at a heat below redness, and did not rise in vapour when heated to ignition, in a tube of plate glass; but acted violently on the glass, producing a black mass which seemed to contain barytes and a fixed alkaline basis in the first degree of oxidizement.

When exposed to the air, it rapidly tarnished and fell into a white powder, which was barytes.

When introduced into water, it acted upon it with great violence, it sunk to the bottom, hydrogen gas was liberated, and barytes was formed.

Barium sunk in sulphuric acid, though surrounded with bubbles of hydrogen gas; and hence Dr. Davy concludes that it cannot be less than four or five times heavier than water.

It flattened by pressure, but required considerable force for this effect.

STRONTITES.

The metal from this earth, denominated by Dr. Davy, strontium, sunk in sulphuric acid, and exhibited the same characters

as that from barytes, except in producing strontites by its attracting oxygen.

LIME.

Calcium, or the metal from lime, says Dr. Davy, I have never been able to examine exposed to the air, or under naptha. In the case in which I was able to distil the quicksilver from it to the greatest extent, the tube unfortunately broke, while warm, and at the moment the air entered, the metal, which had the colour and lustre of silver, instantly took fire, and burnt with an intense white light into quicklime.

MAGNESIA.

The metal from this earth, to which Dr. Davy has given the name of magnium, still retaining combined a small portion of quicksilver, was white and of a brilliant lustre. It sunk rapidly in water, though surrounded with globules of hydrogen gas, producing magnesia, and quickly changed in the air, becoming covered with a white crust, and falling into a fine powder, which proved to be pure magnesia.

The alkaline earths then are metallic oxides, or metals combined with oxygen, the relative proportions of which Dr. Davy has not yet been enabled to ascertain. The principles of their decomposition, says he, are precisely similar to those of the common metallic oxides, the inflammable matter in all cases separating at the negative end of the voltaic circuit, and the oxygen at the positive surface.

(To be continued.)

OBSERVATIONS AND EXPERIMENTS

ON THE TREATMENT OF INJURIES OCCASIONED BY FIRE AND HEATED SUBSTANCES.

BY JACOB BIGELOW, M. D.

The application of substances to the human fibre, which are heated beyond a certain temperature, is followed by the phenomena of pain and inflammation. The pain is of a peculiar kind, resembling that from the continued application of fire to the part ; the inflammation has an uncommon tendency to suppurate, in which event it generally leaves a contracted cicatrix.

The communication of an excessive quantity of caloric to animal bodies, whether living or dead, is followed by certain changes. Of the fluids some are coagulated, others are decomposed, or even vaporized, if the heat be sufficient. The solids are in a greater or less degree expanded, disorganized or decomposed; according to their susceptibility of change and the quantity of caloric received. These processes in the living body being incompatible with its healthy condition, a morbid state of the part affected necessarily ensues. This state is marked by pain, redness, swelling, vesication, suppuration, or mortification; according to the degree and extent of the injury suffered.

The distressing effects of these injuries, when they exist in an extensive degree, are exceeded by few diseases. Very dangerous cases often occur in children, whose clothes are accidentally kindled; in intoxicated persons, who fall into the fire ; and in those exposed by conflagrations, or by explosions of gunpowder and the inflammable gases of mines. The peculiar appearance of a burnt surface has commonly been supposed to require a peculiar treatment; and many practitioners, instead of resorting to the general remedies of inflammation, have placed their reliance on the supposed powers of a specific remedy. In this way different and opposite modes of treatment have been adopted, whose apparent success or failure at different times has occasioned considerable disputes respecting their comparative

efficacy. After a variety of trials have been made, and a multiplicity of cases detailed, the practice still remains ambiguous and undecided ; and methods of treatment diametrically opposite at the present day, enlist nearly an equal number of advocates.

The two modes of treating burns and scalds, which have recently acquired the greatest share of notice, are those of Mr. Kentish and of Sir James Earle. The former of these consists in the use of stimulant, the latter of cooling applications.

Mr. Kentish recommends that the injured surface be in the first place washed and bathed with rectified spirit of wine, spirit of turpentine, or some similar application, which has been previously heated as far as it can be borne with the finger. After this bathing has been repeated two or three times, the whole is then to be covered with plasters made of common basilicon or resinous ointment, thinned to the consistence of a liniment with spirit of turpentine. This dressing is to be continued for twenty-four hours, after which its place may be supplied with some less stimulating substance, such as proof spirit or laudanum, with the coldness taken off. At the end of forty-eight hours, Mr. K. observes, the inflammation will generally be found to have disappeared, at which time the part may be dressed with camphorated oil, with Goulard's cerate, or with cerate of lapis calaminaris.

The internal treatment recommended by Mr. Kentish, is also stimulant. Wine, ale, alcohol or laudanum, are advised to be used according to circumstances.

Sir James Earle, in a publication, entitled, " An essay on the means of lessening the effects of fire on the human body," defends a mode of treatment directly the reverse of the former. This consists of the antiphlogistic regimen internally, together with the application of cold in the form of water, snow, or pounded ice, to the part affected. Sir Walter Farquhar and Dr. Kinglake, advocate the same mode of procedure ; and the cases related to substantiate the happy effect of the cooling treatment are not less numerous than those in favour of the terebinthinate remedies.

The disputes on the comparative efficacy of the foregoing plans of treatment have been agitated with so much warmth,

and so little impartiality, that the reader of them is like to end his inquiries in complete scepticism rather than in conviction. Inconsistent and opposite facts are often stated, and the same cases distorted to prove both points of the dispute. For instance, the remarkable case of Boerhaave, who was violently scalded by the bursting of Papin's digester, and who got well under copious bleeding and purging; is cited by one, as an instance of a speedy and fortunate cure; and by another as a very tedious and difficult recovery, which might have taken place in half the time under a different mode of treatment. The source of this uncertainty seems firstly to consist in making practical deductions from individual or insulated cases, which do not afford sufficient room for a comparison of the effect of different remedies. Such is the idiosyncracy of different constitutions, and so deceptive the appearance of different injuries, that it is often impossible to pronounce in what degree two cases resemble each other, and in what degree any application has actually expedited or retarded the cure.* According to the caprice or prejudice of practitioners the account of a case may be warped and coloured in such a manner as to prove almost any point of a dispute that is wished. For example, should any one come forth as the advocate for a *negative mode* of treating burns, which should consist in letting them alone, or in leaving the process to nature; there is no doubt that in due time he would be able to collect a sufficient number of apparently satisfactory cases to answer all his purposes. The multitude of cases brought forward by Mr. Kentish and his opponents, in the aggregate, seems only to prove, that oil of turpentine and cold water are both salutary, and both pernicious, according as the practitioner who watched their influence, was under prejudices of a favourable or unfavourable nature toward either application. A second ground of error is likewise contained in the supposition, that a single and specific mode of treatment can be accommodated to all states and degrees of the injuries occasioned by fire.

It is obvious that many more cases may yet be detailed which will not bring the question, in the least, nearer to a decision.

* Some very appropriate remarks on this subject, are contained in Mr. Kentish's essay.

Though a series of observations by a faithful and intelligent practitioner is always entitled to respect and attention; yet when two such courses present us with results diametrically opposite, we are justified in doubting the validity of the ground on which they are founded.

It occurred to me, that could a method be devised of inflicting two equal burns on corresponding parts of the same animal, which should afterward be treated with different applications, that a tolerable chance would be afforded of testing the comparative efficacy of these applications. With this view the following experiments were instituted, which, though not so numerous and complete, as could have been wished; will not, it is hoped, be thought altogether inapplicable to the object for which they were attempted.

EXPERIMENT I.

The two ears of a full grown rabbit were immersed in water, heated near to the boiling point. Particular care was taken to immerse both ears at the same instant, to plunge them to the same depth, and to withdraw them together. In this way two scalds were obtained, as nearly as possible, equal; since they were inflicted by the same substance at an uniform temperature, applied for an equal extent and length of time, to parts corresponding to each other, equidistant from the centre of circulation, and both appertaining to the same subject. The animal was now suspended on his back with his right ear immersed in a vessel of warm water, at about 100° of Fahrenheit; the left in a vessel of cold water, having its temperature reduced by ice. In this way they continued for three quarters of an hour, the temperature of both vessels being kept regular as possible by the occasional addition of warm water and of ice. The two ears were then wiped dry and covered with common resinous ointment.

2d day—The right ear to which warm water had been applied was red and opaque, but the skin remained sound; the left was evidently more inflamed, and contained several small vesications and excoriations. The heat of both was somewhat above the natural standard.

3d day—The cuticle had separated from both ears to some extent, but most from the left to which the cold application had been made. A small slough likewise separated from this ear.

4th day—Additional portions had separated from both ears, but most from the left.

From the 5th to the 18th day both ears continued in a state of ulceration. The tip of the ears having been the first part immersed, and the last withdrawn, was of course the most intensely scalded, and sloughed off from both to some extent. The left ear, which had undergone the cold treatment, suffered most by gangrene, and was several days later than the other in healing.

EXPERIMENT II.

The two ears of a rabbit were immersed in scalding water as formerly. The right ear was covered as far as it was scalded with the stimulating ointment of Mr. Kentish, made of basilicon, thinned to the consistence of a liniment with oil of turpentine. To the left ear was applied a saponaceous liniment, composed of equal parts of lime water and olive oil.

Three hours afterward the ears were examined. The heat of both was much increased, but that of the right to which the spirit of turpentine had been applied was evidently greatest. The pain of this ear was likewise evinced by the animal lopping it, or laying it on his back, while the other was carried upright. Some small blisters had risen on this ear, but none were observed on the other.

2d day—Both ears were preternaturally warm and red, the right continuing more so. They were now covered with resinous ointment.

3d day—A part of the tip of the right ear separated, and some of the remainder appeared destitute of sensation. The left was red and inflamed, but with no appearance of mortification.

4th and 5th days—More of the right ear came off. The left was ulcerated, but without any appearance of gangrene.

6th—8th days—The ulceration continued without any slough from the left ear. About the 9th day, the weather which had

been temperate became cool; and the ears, which were kept moist by the ointment and their own discharge, became constantly cold. To this circumstance I attributed the formation of a considerable slough which came from the right ear about the 10th, and from the left on the 14th day. Both ears soon after healed.

EXPERIMENT III.

The ears of a rabbit being equally scalded as before, the right was covered with Mr. Kentish's ointment; while the left was immersed in cold water with ice for three quarters of an hour. The left was then covered with basilicon, which ointment on the second day was applied to both.

2d day—The right ear was blistered, and discharged a considerable quantity of serum or pus. The left was in a similar situation, but in a less degree.

3d day—Both ears were in a state of suppuration, but the right much the worst; the discharge from this ear being general, from the other partial.

The right ear continued to appear the worst during the recovery, which was not complete before the 30th day. The loss of substance by sloughing was not great from either ear, but was least from the left.

EXPERIMENT IV.

A fourth rabbit was dipped in the same manner with the others; afterwards one ear was immersed in water, the other in proof spirit at the temperature of the room. The scalds, however, proved to be slight, as nothing ensued but a trifling redness and opacity in the parts immersed, which disappeared in two or three days, and nearly at the same time from both. This experiment would not have been mentioned, did it not serve to shew the ground for fallacy, which arises from comparing the cases of different individuals. Had the result of this case been contrasted with any of the former, on presumption that the injuries received were equal; a very eroneous deduction would probably have been the consequence.

The foregoing experiments were conducted on a plan, which, I conceive, were it pursued to a suitable extent, would approach as near to demonstrative certainty, as any subject in the conjectural science of medicine is capable of arriving. A desire of the truth, however, obliges me to state the difficulties which remain, and which may seem to detract something from the weight of the experiments. The ear, which was the part subjected to experiment, is composed chiefly of cartilage and skin; it is remote from the centre of circulation, and its powers of life comparatively feeble. *Possibly* a different mode of treatment may suit this part, from that which agrees with muscles and cellular substance. This is not to be considered as very probable, since the living animal fibre generally exhibits similar phenomena in any part of the body under the influence of the same disease. If any peculiarity existed in the ear, it was probably that of being less susceptible of the action of stimuli. A trial would have been made with some more central part had the operation been equally convenient. A second imperfection in these experiments was caused by the accession of cold weather, which apparently occasioned a more extensive gangrene, than would have ensued under the use of the remedies, without this circumstance. It did not, however, occur during the first days, so that the following appearances may be considered as free from fallacy.—1st, The evident increase of heat, pain, redness, vesication, and gangrene, following the application of oil of turpentine. Exp. II. and III.

2d. The increase of most of the same appearances, where cold water was used in contrast with warm. Exp. I.

As comparative cases come within the plan of these remarks, the following case, in which different remedies were applied to the same subject, is extracted from the Med. and Phys. Journal, vol. 18. page 209.

"Samuel James, aged 40, had his face, hands and back most severely burnt by the explosion of hydrogen gas in a coal mine. The cold application was used to the face and hands; the warm oil of turpentine, according to Mr. Kentish's plan (originally recommended by Heister) was applied to the back, and dressed afterward with unguent, resinæ flav. softened down with the same; in order to try which mode of treatment afforded the most

immediate ease to the patient, as well as the most expeditious cure. According to the patient's own account, the pain of the hands and face was immediately relieved by the cold application, but he complained of the oil of turpentine occasioning a smarting sensation on the back for five or six hours. This mode of dressing was continued for the space of two days; but observing a considerable degree of inflammation remaining from the terebinthinate application, that dressing was changed for the neutralized cerate, which the patient did not observe, his eyes being closed by the great tumefaction of the face; but he expressed the utmost satisfaction from the superior comfort he felt in that dressing compared with the former. The next day the back appeared much less inflamed, continued gradually getting better, and was cured in three weeks. "I am confident," says Dr. Evans, the relater of the case, "the back would have gotten well sooner under the cooling plan of treatment; for the patient constantly complained of the great heat in the part during the application of the oil of turpentine."

In a variety of cases which have occurred under my own observation, it has not been practicable to contrast the effects of different dressings; so that little of a decisive nature can be gathered from them. In one case, however, which I witnessed, of a very severe and extensive burn in a child aged ten years, which was occasioned by the clothes taking fire, and which afterward terminated fatally; the application of the oil of turpentine in the form of a liniment, produced the most violent aggravation of pain, which did not cease before the patient was thrown into convulsions. Instances of the same effect have been mentioned to me by several medical friends.

Most writers, who appear as principal advocates of any mode of practice, feel obligated to produce something like a theory or rationale, which shall account for, or at least apply to the facts and phenomena adduced. Accordingly, Mr. Kentish and the others have not omitted to back their catalogue of cases with a train of reasoning illustrative of the propriety of their favourite applications. Of these the two principal are entitled to a separate attention.

OF THE STIMULANT PLAN.

In defence of the oil of turpentine and other stimulant applications, Mr. Kentish states the following as a *law of the system*. "That any part of the system having its action increased to a very high degree, must continue to be excited, though in a less degree, either by the stimulus which caused the increased action, or some other having the nearest similarity to it; until by degrees the extraordinary action subsides into the healthy action of the part." It has also been urged by supporters of the plan, that a lesser stimulus, as the oil of turpentine, is comparatively *sedative* in its operation on a part violently excited by a burn. The above reasoning may amuse the imagination, but does not satisfy the judgment. The analogy of almost every subject in medicine and surgery teaches us, that a part already highly irritated receives no benefit from an additional stimulus, which must tend only to increase the sum of the irritation. If a man bruise his finger, do we, by way of expediting the cure, proceed to bruise it again, but with less violence, because "it must continue to be excited in a less degree" "until the extraordinary action subsides into the healthy action of the part?"— Or if a man has received an hundred lashes, shall a surgeon prescribe ninety more, because ninety lashes are less stimulating than an hundred, and therefore comparatively sedative?— The propriety is just the same, when we irritate with acrid spirit of turpentine, a part already suffering violent pain and inflammation, as well as increased sensibility, from a burn. Though the spirit of turpentine applied to a healthy surface is less injurious than fire, yet if we apply the one to a part already injured by the other, we only inflict a double evil, or produce an aggregate of the mischief of both.

With regard to the internal stimulant plan of Mr. Kentish, it is advocated on a ground not less exceptionable. He assumes it as a fact, that "a healthy vigorous man" suffers less by a burn of the same extent, than "a man of an irritable habit;" and from thence he infers that strength resists the ill consequences of these injuries, while weakness promotes them; and that therefore in all cases "we should make the system as strong as we

can immediately on the attack." Whether this principle be just may very properly be questioned, since it is an undoubted fact that from ordinary mechanical injuries, a vigorous, plethoric man suffers a higher degree of inflammation, than one whose strength and quantity of blood are less, and whose powers of re-action of course are more feeble. When a common injury takes place, which is capable of producing inflammation and symptomatic fever, depletion and the antiphlogistic regimen are resorted to as preventives; and this in a greater or less degree, according as the subject is more or less plethoric. For instance, if a vigorous man receive a contusion on any part of his body, so violent as to endanger suppuration or gangrene; we prevent or mitigate these symptoms by blood-letting, purging, and abstinence. Now if the same man had received a burn on the same part, endangering the same symptoms, ought our practice to be different? Is the system so revolutionized as to require opposite treatment, because an injury is caused by fire instead of mechanical violence? Or is a stout and plethoric patient, with a full, hard, and frequent pulse, to be stimulated with brandy and laudanum, because his fever originated in a burn? It is certainly the height of empiricism to precribe a specific mode of treatment for a disease, merely from its name. A rational treatment is always dependent on circumstances, and is stimulant or sedative, according to the constitution of the patient, the state of the pulse, and the condition of the system.

OF THE COOLING PLAN.

Sir James Earle, and Dr. Kinglake, the former in his Essay, and the latter in the Med. and Phys. Journal; have advocated a mode of treatment precisely opposite to that of Mr. Kentish; yet like him they seem to have erred in pursuing a favourite remedy to extremes. The general and continued application of cold to a part injured by a burn or scald, is resorted to, from a belief of its tendency to abstract the excess of caloric from the part, and to restore the equilibrium. This belief is a just one, so far as it applies to the application of cold for a short time, immediately after the injury from a heated substance is received; but the continued application of it for hours and days on

the same principle, is altogether unphilosophical, and has been sufficiently refuted in the treatise of Mr. Kentish. Every particle of caloric communicated to the living body by a hot substance may be abstracted in one minute by plunging the part affected in cold water; and if this immersion be continued, the temperature will soon be reduced below the natural standard. It is true that on withdrawing the affected part, its temperature will soon rise to the former pitch; but this increased temperature can be nothing more than animal heat, a little increased by the violent *action* of the part; as happens in most cases of inflammation. As to the common phrase of "killing the fire," by which is meant only the relief of pain that takes place at the commencement of resolution or suppuration; this cannot be hastend by cold applications, except in slight cases which admit of resolution; whereas, in cases where blisters have arisen, and suppuration is about to take place, its progress is only retarded by the employment of cold.

With regard to the antiphlogistic regimen, nothing more need be said, than that its use or omission must be determined on, altogether from the state of the system.

It may be proper in this place to say something respecting the use of alcohol, ether, and proof spirit. These substances are often recommended in a vague manner, without reference to the mode of their application, although on this circumstance depends their efficacy. If a part of the body be washed with cold spirit, or a thin cloth wet with spirit be applied; the rapid evaporation which takes place, renders the effect powerfully refrigerant. On the contrary, if the part be immersed in spirit, or the spirit be applied warm, or with a thickly folded cloth; its operation is unquestionably that of a stimulant.

After considering at length the opposite extremes of treatment, which have been adopted; the result of both reason and experiment appears to be, that the two extremes are alike injudicious, when pursued in their full extent; and neither of them suited to the varieties of burns and of constitutions. An intermediate plan of treatment, which shall vary according to circumstances, and be dependant on the degree and state of disease, is undoubtedly the most deserving of attention.

In slight burns where no vesications take place, and where resolution appears practicable, we should resort to cold applications, either of water or of spirit; since in this way the most speedy relief is generally given to the pain, and likewise, as in other inflammations, resolution is accelerated. The preparations of lead, or any other discutient, may be added when thought proper. In all cases of burns and scalds it may be expedient to make one application of cold water as soon as possible after the injury, to abstract the heat from the clothes, skin, &c. and prevent the spreading of its effects.

In more violent burns, attended with blisters and acute pain, a permanent relief is to be expected only from suppuration. This is promoted, as in other cases of suppurative inflammation, *not* by acrid stimulants, *not* by snow and ice; but by mild emollients and warm fomentations or poultices. Though cold applications by benumbing the nerves may afford a temporary relief of pain, yet this returns with equal or increased violence when these applications are discontinued; so that they must be persevered in for a long time, until tardy suppuration appears in spite of them, before effectual relief is given. In the first experiment on the rabbits, the ear which was immersed in cold water fared worse than its fellow, which was dipped in warm. In the treatment of burns tending to suppuration, perhaps no application is better than a liniment of lime water and oil. This is very gently stimulant and astringent, and by its saponaceous quality unites with the discharge, and is thus more generally and equally applied than any unctuous substance would be in its place.

In very violent burns, where the life of a part is destroyed, or where the inflammation is so great as to render mortification to a considerable extent probable; our treatment must depend on the state of the system and the appearance of the part. If marks of active inflammation are present, with increased heat and force of circulation, a sedative and depleting plan is to be followed, until the violent action has abated. On the contrary, if the inflammation be of the passive kind, with diminished action of the part, and atony and prostration of strength in the system; we must then depend on stimulants and antiseptics. It can be only

in burns of this kind that Mr. Kentish's method of treatment is admissible in any extent.

In the subsequent treatment of burns, if exuberant granulations arise, they may be repressed by gentle astringents, by pressure, or by escharotics. Mr. Kentish recommends powdered chalk, but this I have found insufficient, when mixed with a third part of burnt alum. Pure alum answers the purpose perfectly well. The separation of sloughs is facilitated, according to Mr. Kentish, by introducing powdered chalk into the cavities between them and the living parts.

The contraction of the cicatrix is often an unpleasant consequence of burns. It may be obviated in a degree by a proper position of the cicatrizing part. Sometimes the contraction is so great as to impede circulation; in which case it is necessary to divide the newly formed skin in different places, thus allowing it room to expand.

The foregoing observations are part of a manuscript dissertation "on Burns and Scalds," written for a former occasion.

REMARKS

ON DISEASES RESEMBLING SYPHILIS;

WITH OBSERVATIONS ON THE ACTION OF THOSE CAUSES WHICH PRODUCE THEM.

BY WALTER CHANNING, M. D.

NOTHING has a more direct tendency to confirm preconceived notions, than the frequent occurrence of the very causes, and such as nearly resemble those which first produced them. A habit is thus formed of referring to the same origin, every the most trifling circumstance, which approximates in the least to that effect which has most generally, say always, resulted from it. The result of this is an unwillingness in the mind to search for new causes, or even to avail itself of such as are apparent, which might require some considerable trouble in the one instance in their acquisition, in the other in their application.

These observations apply very well to medicine in general, but more particularly to those parts of the science on which there is the least doubt, or in other words, which have been brought to the greatest perfection. The disease, on the counterfeits of which we intend to make some remarks, is one to which they are most appropriate. It has been, and is of such frequent occurrence, its remedies have been supposed so universally understood, that at some periods of medical history, and the remark applies with some force to the present time, it was as unparalleled in the number of those who promised to cure it, as in the frequency of its occurrence. It would seem from the works of some very respectable authors on the subject, that its cure was one of the simplest things in nature. Who would hesitate in the use of the means, when so great an authority as Sir Richard Wiseman tells us, when speaking of the use of mercury in lues, we must give from twenty to thirty grains of calomel daily, to be followed up with a few of turbith mineral, if, to use his own words, the patient's chops do not swell, after taking it for four or five days; and this he gives us as the mildest course in the mildest cases. And farther, with how

much additional confidence must one proceed, when in the works of the celebrated Boerhaave, he is taught that "the fat of the body to the last particle must be drawn off in the cure of the venereal disease ; for even if the least particle remains, we are to dread a relapse ;" and in another place, "If the patient spit three pints or two quarts in the 24 hours, it is sufficient ; but if he spit less, more mercury is necessary." Astruc, also, who has written so elaborately and so well on this disease, speaks in the following manner of those ulcers which sometimes attend profuse salivation, in the throat. "Alia enim inutilia sunt, imo periculosa ; *utilia alia sunt, et periculo omni vacua.*" Finally, we find that as late as 1790, a work published by Mr. Lombard states, that it was then customary in France to anoint the whole body frequently with mercurial ointment.—Such then has been the practice adopted in the cure of lues venerea. If, however, and of the truth of the supposition there can be no doubt, diseases only resembling syphilis existed at that day, as they most certainly do at present, are we not correct if we assert, that those most distressing cases recorded as venereal, which would not yield to a specific remedy, were merely the counterfeits of that disease, aggravated by a most absurd and unjustifiable use of mercury?—But it is not necessary for us to go back even twenty years for facts, which, as far as great names go, give rise to fixed maxims in practice. So common are they at this day, that very lately, elaborate and highly valuable works have appeared, whose sole object has been to correct the practice in a disease, whose very frequency of occurrence has been the cause of those very evils which those works are intended to remove. In the course of these remarks, such an use will be made of those books as we flatter ourselves will make our readers acquainted with the most important information they contain. And as the object of these remarks, among others, is to excite such an attention to this class of diseases, as will place the practice in them on a more fixed foundation, it will, we hope, be considered no useless effort, if they should at all be instrumental in producing that effect.

Mr. John Hunter, to whom the world is indebted for some of the most valuable information on the most interesting points of physiology and medicine, having brought his great work on the

venereal disease to a close, found that he should not do his whole duty to mankind, if, while he had most completely succeeded in pointing out what was the nature and characters of the venereal disease, he should withhold what had constantly obtruded itself on his mind while engaged in those speculations and observations, viz. that there were many instances of diseased action on the same parts subject to the venereal, attended with apparently the same symptoms, but which were not venereal, which were uniformly aggravated in violence by the use of mercury, and which as uniformly healed when not irritated by the application of the mercurial stimulus. But besides the local diseases which resemble syphilis, there is, according to the author just quoted, hardly any disorder which has more diseases resembling it than syphilis. Now although many of these are treated with the greatest propriety, to a degree, in the same manner with lues, nothing is more erroneous, or attended with more distressing symptoms, than persevering in the practice, when so far from yielding, every symptom is aggravated.

Chronic rheumatism, which, from some suspicious circumstances, one might think was the sequela of syphilis, but which in fact is not, has been, and is at times successfully treated, with such doses of mercury as are attended with its specific irritation. But to what accumulated suffering is our patient exposed, how much in fact must he suffer, if for aggravated symptoms, the consequence of the mercurial course, the *remedy* be pushed still farther? Still, from erroneous opinions of the nature of the disease, this might happen. On this subject, remarks Hunter, "mercury given without caution, often produces the same symptoms as rheumatism, and I have seen even such supposed to be venereal, and the medicine continued."

But it is not necessary to refer to a disease, depending on a constitutional cause, if I may so express myself, in every attack it makes, whether it be from those exposures to its most peculiar causes, and when it follows as the immediate effect;—or, when it follows in the train of effects, which a local cause may produce, as in syphilis. It is a fact of almost daily occurrence, that the parts commonly affected with syphilis, are liable to ulcerative processes, which, so far from being the consequences of syphilitic irritation, are altogether harmless, and readily yield to the mildest treatment, as appears from the following case.

CASE I.

W. J. a seaman, applied to me for advice respecting the treatment of sores on the glans penis. The account he gave of them was as follows. He had observed similar ones to these about a year ago, while in England. They had supervened shortly after sexual intercourse; that he had applied to a surgeon, who had ordered a mercurial course, supposing them to be syphilitic. The sores, however, did not yield, but were manifestly aggravated by the specific action of the mercury. He now went to sea, the mercurial course was suspended, the ulcers grew healthy and soon healed. It was soon after his return from this voyage, sexual intercourse having been had, that ulcers similar in their appearance, reappeared, and for these he applied to me. From taking the circumstances into consideration, I apprehended that these were not venereal; they had not the most striking characters of chancre. I therefore ordered a wash composed of lime-water and the sub-muriate of mercury, and in a few days my patient was very well, and has continued so now, at the distance of some months.

No one will contend for a moment that the cure in the preceding case was effected by the specific action of the mercury used in the wash; for a disease in the same parts, with exactly similar appearances had been aggravated by the constitutional mercurial irritation; whereas the cure in this case was undoubtedly the effect of local stimulus alone, and which might with equal ease have been the effect of any other stimulus acting with an equal power. But it may be asked, how can local stimulus act to the production of a cure, of a diseased action, which is aggravated when the curative process is carried on by the same means through the agency of the system at large. We reply, that the very nature of a local irritation, diseased action, or whatever it may be called, implies a local remedy. That while higher or lower degrees of excitement are believed to occur in parts only, local stimuli or sedatives promise cure.—In short, not the smallest necessity can be supposed for constitutional remedies for local disorder, since it has not in the smallest degree any connection with the system at large, it has not proceeded from any derangement in it, and of course cannot require such derangement as specifics produce, for its cure.

(To be continued.)

CASE AND DISSECTION OF A BLUE FEMALE CHILD:

In a Letter from John S. Dorsey, M. D. Adjunct Professor of Surgery in the University of Pennsylvania.

S. R. when born, was for a considerable time supposed to be dead—did not cry, or evince any living actions. The lungs were artificially inflated for several minutes, and life at length appeared, but very feebly.—A livid countenance, with frequent syncope took place.—With great maternal care the infant was kept alive, and as she grew became remarkably sprightly and active.—When two years old was unusually intelligent and fond of exercise.—As she advanced in age, her fondness for violent exercise in playing often exposed her to danger, as these efforts never failed to produce syncope and a kind of convulsion. Laughing, crying, or any emotion of mind, also brought on the syncope, from which, after falling into a horizontal position, she generally soon recovered. Her countenance, at all times blueish and livid, was in these fits extremely so. Her nails were always of the colour of litmus, or perhaps a little nearer to violet.

She had the usual diseases of children, the vaccine—chicken pox—scarlatina—whooping cough—measles—from all which she recovered as rapidly as is usual.—The peculiarities of those children in whom the foramen ovale of the heart remains open, all appeared in this little girl, and need not be more minutely described.

After death the thorax was examined.—It was of an unusual shape, being more cylindrical than common, and the lungs having less the form of a cloven hoof, when inflated, than they usually assume.—The heart was very small. In place of a right auricle was observed a small appendage like the edge of that portion of the heart, not capable of containing more than one fourth its usual contents. The right ventricle was as firm in texture as the left, and the quantity of muscular substance about equal in both ventricles. But the most singular circumstance was in the distribution of the great arteries. The pulmonary was extremely small.—The *aorta* of unusual size, and *communicating with both ventricles.*

SPURRED RYE.

This article has been introduced into general notice through the medium of the New York Medical repository, and in this quarter more particularly by Dr. Thacher, in his valuable Dispensatory. Our experience has fully satisfied us of its powers "ad partum accelerandum." It has not appeared to us to relax "the rigidity of the contracted muscular fibres;" but it has almost uniformly increased the efforts of the uterus to expel the fœtus. Accordingly, where an increase of those efforts was *alone* wanting, it has hastened the termination of the labour.

But we are apprehensive that one evil may sometimes result from its use, which has not been hitherto suggested, and this is the death of the child. In ordinary labours the head of the child is pushed forward by every pain, and undergoes oftentimes considerable pressure; but this is commonly of short duration, for it retreats as soon as the pain goes off. But when the ergot has been administered, the efforts of the uterus are so continued, that even though the head be not constantly pressed forward, it is never allowed to retreat. So at least it happens in many cases, and the head is consequently subject to unceasing pressure for several minutes, and occasionally for half an hour or an hour. It would not be surprising if the life of the child should sometimes be lost under these circumstances.—In truth, so we fear it has been; for we were led to the foregoing reflections by observing that in a large proportion of cases, where the ergot was employed, the children did not respire for an unusual length of time after the birth; and in several cases the children were irrecoverably dead.

It would be a consolation to us to learn that we are alone in the foregoing observations; but we feel it a duty to give this caution, and we hope others will be equally ready in stating their observations, if they have been equally unfortunate. At present we think that this powerful article should be administered only to women, who have previously had children, where the presentation is natural, and where there is a very perfect relaxation both of the os tincæ and os externum.

ON SOME

PHYSIOLOGICAL RESEARCHES,

RESPECTING THE INFLUENCE OF THE BRAIN ON THE ACTION OF THE HEART, AND ON THE GENERATION OF ANIMAL HEAT.

BY MR. B. C. BRODIE, F.R.S.

Read before the Royal Society, December 20, 1810.

HAVING had the honour of being appointed by the President of the Royal Society, to give the Croonian Lecture, I trust that the following facts and observations will be considered as tending sufficiently to promote the objects for which the lecture was instituted. They appear to throw some light on the mode in which the influence of the brain is necessary for the continuance of the action of the heart; and on the effect, which the changes produced on the blood in respiration have on the heat of the animal body.

In making experiments on animals, to ascertain how far the influence of the brain is necessary to the action of the heart, I found that when the animal was pithed, by dividing the spinal marrow in the neck, respiration was immediately destroyed, but the heart still continued to contract, circulating dark coloured blood, and in some instances, from 10 to 15 minutes elapsed before its action had entirely ceased. I further found that when the head was removed, the divided blood vessels being secured by ligature, the circulation still continued, apparently unaffected by the entire separation of the brain. These experiments confirmed the observations of Mr. Cruikshank* and M. Bichat,† that the brain is not directly necessary to the action of the heart, and that when the functions of the brain are destroyed, the circulation ceases only in consequence of the suspension of respiration. This led me to conclude, that, if respiration was produced artificially, the heart would continue to contract for a still longer

* Phil. Trans. 1795.

† Recher. Physiolog. sur la Vie et la Mort.

period of time after the removal of the brain. The truth of this conclusion was ascertained by the following experiment.

EXPERIMENT I.

I divided the spinal marrow of a rabbit in the space between the occiput and atlas, and having made an opening into the trachea, fitted into it a tube of elastic gum, to which was connected a small pair of bellows, so constructed that the lungs might be inflated, and then allowed to empty themselves. By repeating this proces once in five seconds, the lungs being each time fully inflated with fresh atmospheric air, an artificial respiration was kept up. I then secured the blood vessels in the neck, and removed the head by cutting through the soft parts above the ligature, and separating the occiput from the atlas. The heart continued to contract, apparently with as much strength and frequency as in a living animal. I examined the blood in the different sets of vessels, and found it dark coloured in the venæ cavæ and pulmonary artery, and of the usual florid red colour in the pulmonary veins and aorta. At the end of twenty five minutes from the time of the spinal marrow being divided, the action of the heart became fainter, and the experiment was put an end to.

With a view to promote the inquiry instituted by the society for promoting the knowledge of animal chemistry, respecting the influence of the nerves on the secretions,* I endeavoured to ascertain whether they continued after the influence of the brain was removed. In the commencement of the experiment I emptied the bladder of its contents by pressure ; at the end of the experiment the bladder continued empty.

This experiment led me to conclude that the action of the heart might be made to continue after the brain was removed, by means of artificial respiration; but that under these circumstances, the secretion of urine did not take place. It appeared, however, desirable to repeat the experiment on a larger and less delicate animal ; and that in doing so, it would be right to ascertain whether, under these circumstances, the animal heat was kept up to the natural standard.

* Phil. Trans. for 1809.

EXPERIMENT II.

I repeated the experiment on a middle sized dog. The temperature of the room was 63° of Fahrenheit's thermometer. By having previously secured the carotid and vertebral arteries, I was enabled to remove the head with little or no hæmorrhage. The artificial respirations were made about twenty four times in a minute. The heart acted with regularity and strength.

At the end of 30 minutes from the time of the spinal marrow being divided, the heart was felt through the ribs contracting 76 times in a minute.

At 35 minutes, the pulse had risen to 84 in a minute.

At an hour and 30 minutes, the pulse had risen to 88 in a minute.

At the end of two hours, it had fallen to 70, and at the end of two hours and a half, to 35 in a minute ; and the artificial respiration was no longer continued.

By means of a small thermometer with an exposed bulb, I measured the animal heat at different periods.

At the end of an hour, the thermometer in the rectum had fallen from 100° to 94°.

At the end of two hours, a small opening being made in the parietes of the thorax, and the ball of the thermometer placed in contact with the heart, the mercury fell to 86° ; and half an hour afterwards, in the same situation, it fell to 78°.

In the beginning of the experiment I made an opening into the abdomen, and having passed a ligature round each ureter, about two inches below the kidney, brought the edges of the wound in the abdomen together, by means of sutures. At the end of the experiment, no urine was collected in the ureters above the ligatures.

On examining the blood in the different vessels, it was found of a florid red colour in the arteries, and of a dark colour in the veins, as under ordinary circumstances.

During the first hour and a half of the experiment, there were constant and powerful contractions of the muscles of the trunk and extremities, so that the body of the animal was moved in a very remarkable manner, on the table on which it lay, and twice there was a copious evacuation of fæces.

EXPERIMENT III.

The experiment was repeated on a rabbit. The temperature of the room was 60°. The respirations were made from 30 to 35 in a minute. The actions of the heart at first were strong and frequent; but at the end of an hour and 40 minutes, the pulse had fallen to 24 in a minute.

The blood in the arteries was seen of a florid red, and that in the veins of a dark colour.

A small opening was made in the abdominal muscles, through which the thermometer was introduced into the abdomen, and allowed to remain among the viscera.

At the end of an hour the heat in the abdomen had fallen from 100° to 89°. At the end of an hour and thirty minutes, in the same situation, the heat had fallen to 85°; and when the bulb of the thermometer was placed in the thorax, in contact with the lungs, the mercury fell to 82°.

It has been a very generally received opinion, that the heat of warm-blooded animals is dependent on the chemical changes produced on the blood by the air in respiration. In the two last experiments, the animals cooled very rapidly, notwithstanding the blood appeared to undergo the usual changes in the lungs, and I was therefore led to doubt whether the above mentioned opinion respecting the source of animal heat is correct. No positive conclusions, however, could be deduced from these experiments. If animal heat depends on the changes produced on the blood, by air in respiration, its being kept up to the natural standard, or otherwise, must depend on the quantity of air inspired, and on the quantity of blood passing through the lungs in a given space of time; in other words, it must be in proportion to the fullness and frequency of the pulse, and the fullness and frequency of the inspirations. It therefore became necessary to pay particular attention to these circumstances.

EXPERIMENT IV.

The experiment was repeated on a dog of a small size, whose pulse was from 130 to 140 in a minute, and whose respirations, as far as I could judge, were performed from 30 to 35 in a minute.

The temperature of the room was 63°. The heat of the rectum of the animal at the commencement of the experiment was 99°. The artificial inspirations were made to correspond as nearly as possible to the natural inspirations, both in fullness and frequency.

At 20 minutes from the time of the dog being pithed, the heart acted 140 times in a minute, with as much strength and regularity as before. The heat in the rectum had fallen to 96½.

At 40 minutes, the pulse was still 140 in a minute; the heat in the rectum 92½.

At 55 minutes, the pulse was 112, and the heat in the rectum 90°.

At an hour and 10 minutes, the pulse beat 90 in a minute; and the heat in the rectum was 88°.

At an hour and 25 minutes, the pulse had sunk to 30, and the heat in the rectum was 85°. The bulb of the thermometer being placed in the bag of the pericardium, the mercury stood at 85°, but among the viscera of the abdomen, it rose to 87½.

During the experiment there were frequent and violent contractions of the voluntary muscles; and an hour after the experiment was begun, there was an evacuation of fæces.

At the suggestion of Professor Davy, who took an interest in the inquiry, I took pains to procure for the following experiment, two rabbits, nearly of the same size and colour.

EXPERIMENT VII.

I procured two large full grown rabbits, of the same colour, and so nearly equal in size, that no difference could be detected by the eye.

The temperature of the room was 57°, and the heat in the rectum of each rabbit previous to the experiment was 100½.

I divided the spinal marrow in one of them, produced artificial respiration; and removed the head, after having secured the vessels in the neck. The artificial respirations were made about 35 times in a minute.

During the first hour, the heart contracted 144 times in a minute.

At the end of an hour and a quarter, the pulse had fallen to 136 in a minute, and it continued the same at the end of an

hour and a half. At the end of an hour and 40 minutes, the pulse had fallen to 90 in a minute, and the artificial respiration was not continued after this period.

Half an hour after the spinal marrow was divided, the heat in the rectum had fallen to 97°.

At 45 minutes, the heat was 95½.

At the end of an hour, the heat in the rectum was 94°.

At an hour and a quarter, it was 92°.

At an hour and a half, it was 91°.

At an hour and 40 minutes, the heat in the rectum was 90½, and in the thorax, within the bag of the pericardium, the heat was 87½.

The temperature of the room being the same, the second rabbit was killed by dividing the spinal marrow, and the temperature was examined at corresponding periods.

Half an hour after the rabbit was killed, the heat in the rectum was 99°.

At 45 minutes, it had fallen to 98°.

At the end of an hour, the heat in the rectum was 96½.

At an hour and a quarter, it was 95°.

At an hour and a half, it was 94°.

At an hour and 40 minutes, the heat in the rectum was 93°, and in the bag of the pericardium 90½.

The following table will show the comparative temperature at corresponding periods.

Time.	Rabbit with artificial respiration.		Dead Rabbit.	
	Therm. in the Rectum.	Therm. in the Pericard.	Therm. in the Rectum	Therm. in the Pericard.
Before the Experiment.	100½		100½	
30 min.	97		99	
45 ——	95½		98	
60 ——	94		96½	
75 ——	92		95	
90 ——	91		94	
100 ——	90½	87½	93	90½

In this experiment, the thorax even in the dead animal cooled more rapidly, than the abdomen. This is to be explained by the difference in the bulk of these parts. The rabbit in which the circulation was maintained by artificial respiration, cooled more rapidly than the dead rabbit; but the difference was more perceptible in the thorax, than in the rectum. This is what might be expected, if the production of animal heat does not depend on respiration; since the cold air, by which the lungs were inflated, must necessarily have abstracted a certain quantity of heat, particularly, as its influence was communicated to all parts of the body, in consequence of the continuance of respiration.

It was suggested that some animal heat might have been generated, though so small in quantity, as not to counterbalance the cooling powers of the air thrown into the lungs. It is difficult or impossible, to ascertain with perfect accuracy, what effect cold air thrown into the lungs would have on the temperature of an animal under the circumstances of the last experiment, independently of any chemical action on the blood: since, if no chemical changes were produced, the circulation could not be maintained, and if the circulation ceased, the cooling properties of the air must be more confined to the thorax, and not communicated in an equal degree to the more distant parts. The following experiment, however, was instituted, as likely to afford a nearer approximation to the truth, than any other that could be devised.

EXPERIMENT VIII.

I procured two rabbits of the same size and colour: the temperature of the room was 64°. I killed one of them by dividing the spinal marrow, and immediately, having made an opening into the left side of the thorax, I tied a ligature round the base of the heart, so as to stop the circulation. The wound in the skin was closed by a suture. An opening was then made into the trachea, and the apparatus for artificial respiration being fitted into it, the lungs were inflated, and then allowed to collapse, as in the former experiment, about 36 times in a minute. This was continued for an hour and a half, and the temperature

was examined at different periods. The temperature of the room being the same, I killed the second rabbit in the same manner, and measured the temperature at corresponding periods. The comparative temperature of these two dead animals, under these circumstances, will be seen in the following table.

Time.	Dead rabbit, whose lungs were inflated.		Dead rabbit, whose lungs were not inflated.	
	Therm. in the rectum.	Therm. in the thorax.	Therm. in the rectum.	Therm. in the thorax.
Before exp.	$100\frac{1}{2}$		$100\frac{1}{2}$	
30 min.	97		98	
45 ——	$95\frac{1}{2}$		96	
60 ——	94		$94\frac{1}{2}$	
75 ——	$92\frac{1}{2}$		93	
90 ——	91	86	$91\frac{1}{2}$	$88\frac{1}{2}$

In this last experiment, as may be seen from the above table, the difference in the temperature of the two rabbits, at the end of an hour and a half, in the rectum, was half a degree, and in the thorax, two degrees and a half; whereas in the preceding experiment, at the end of an hour and forty minutes, the difference in the rectum was two and a half degrees, and in the thorax three degrees. It appears, therefore, that in the rabbit, in which the circulation was maintained by artificial respiration, cooled more rapidly, on the whole, than the rabbit, whose lungs were inflated in the same manner after the circulation had ceased. This is what might be expected if no heat was produced by the chemical action of the air on the blood; since, in the last case, the cold air was always applied to the same surface, but in the former it was applied to fresh portions of blood, by which its cooling powers were communicated to the more distant parts of the body.

In the course of the experiments, which I have related, I was much indebted to several members of the Society for promoting the knowledge of animal chemistry, for many important suggestions, which have assisted me in prosecuting the inquiry.

I have selected the above from a great number of similar experiments, which it would be needless to detail. It is sufficient

to state that the general results were always the same; and that whether the pulse was frequent or slow, full or small, or whether the respirations were frequent or otherwise, there was no perceptible difference in the cooling of the animal.

From the whole we may deduce the following conclusions:

1. The influence of the brain is not directly necessary to the action of the heart.

2. When the brain is injured or removed, the action of the heart ceases only because respiration is under its influence, and if under these circumstances respiration is artificially produced, the circulation will still continue.

3. When the influence of the brain is cut off, the secretion of urine appears to cease, and no heat is generated; notwithstanding the functions of respiration and the circulation of the blood continue to be performed, and the usual changes in the appearance of the blood are produced in the lungs.

4. When the air respired is colder than the natural temperature of the animal, the effect of respiration is not to generate, but to diminish animal heat.

ADDITION TO THE CROONIAN LECTURE FOR 1810.

In the experiments formerly detailed, where the circulation was maintained by means of artificial respiration after the head was removed, I observed that the blood in its passage through the lungs, was altered from a dark to a scarlet colour; and hence I was led to conclude, that the action of the air produced in it changes analagous to those, which occur under ordinary circumstances. I have lately, with the assistance of my friend Mr. W. Brande, made the following experiment, which appears to confirm the truth of this conclusion.

An elastic gum bottle having a tube and stop-cock connected with it, was filled with about a pint of oxygen gas. The spinal marrow was divided in the neck of a young rabbit, and the blood vessels having been secured, the head was removed, and the circulation was maintained by inflating the lungs with atmospheric air for five minutes, at the end of which time the tube of the gum bottle was inserted into the trachea, and care-

fully secured by a ligature, so that the air might not escape. By making pressure on the gum bottle the gas was made to pass and repass into and from the lungs about thirty times in a minute. At first the heart acted 120 times in a minute, with regularity and strength; the thermometer, in the rectum, rose to 100°. At the end of an hour, the heart acted as frequently as before, but more feebly; the blood in the arteries was very little more florid than that in the veins; the thermometer in the rectum had fallen to 93°. The gum bottle was then removed. On causing a stream of the gas which it contained, to pass through lime-water, the presence of carbonic acid was indicated by the liquid being instantly rendered turbid. The proportion of carbonic acid was not accurately determined; but it appeared to form one half of the quantity of gas in the bottle.

REVIEW.

ARTICLE I.

Sixteen Introductory Lectures, to Courses of Lectures upon the Institutes and Practice of Medicine, with a Syllabus of the latter. To which are added, Two Lectures upon the Pleasures of the Senses and of the Mind, with an Inquiry into their Proximate Cause. Delivered in the Universty of Pennsylvania. By Benjamin Rush, M. D. Professor of the institutes and practice of medicine in said University. Philadelphia; Bradford and Innskeep. 1811.

The province of a lecturer on the institutes and practice of medicine is attended with peculiar difficulties and peculiar responsibility. The branch he teaches stands highest in the physicians education, and at the same time is least perfectly understood. The instruction of anatomy and chemistry, of natural history and philosophy, consists, for the most part, in the demonstration of facts and appearances, which are generally received and agreed on by the scientific world. But the same certainty by no means exists in regard to the theory and practice of medicine. Had this science arrived at the perfection of which we suppose it capable; were our knowledge of diseases and their treatment as definite as our acquaintance with the forms and laws of matter; there would be neither doubt nor diversity in medical practice, and mankind would be entitled to reach the allotted period of three score years and ten. Unfortunately medicine has, from unavoidable circumstances, made a progress inferior to most of the physical sciences. It is conversant with subjects whose most regular and uniform movements are always intricate, often inscrutable; and with these it is conversant during all the anomalies and eccentricities which attend them in their disordered and unnatural state. It is the fate of the medical practitioner to be often perplexed with doubtful and contradictory appearances; to be disappointed in his

surest expectations, and thwarted in his most rational efforts; to form momentous decisions on presumptive evidence, and exhibit his strongest agents under a dubious prospect of success.

An instructer of medicine is in a degree answerable for the uncertainty of the science he teaches. Expectations are naturally directed toward him for the solution of doubts, and the satisfaction of inquiry. As in this branch the earliest exertions of students are to be called forth, to this they devote their most anxious attention. A professor of the theory and practice of physic should be respected and distinguished as such, only when he unites to experience and to established professional eminence, a lucid and impressive manner of communicating the results and inferences of his own and others observation.

The character of Dr. Rush as an experienced, erudite, and accomplished physician, and as an eloquent and instructive lecturer, is well known to the world. During a long life he has devoted himself with uncommon attachment to the cultivation of a science, the pleasure of which, he declares, has to him no equal among human pursuits. Although the exuberance of a fertile invention has sometimes led him into speculations, whose correctness is of a questionable nature, yet he has accomplished much toward promoting a decisive and successful treatment of many diseases. His medical writings, considered in regard to their extent and consequence, as well as the notice they have attracted abroad, stand decidedly before those of any other American physician.

The volume before us is of an interesting character. It is a collection of introductory discourses pronounced in different years on subjects appertaining chiefly to medical ethics, and to such heads as are calculated to interest general readers, as well as those immediately conversant in medicine. The number and diversity of these topics renders an analysis of the work impracticable within our limits. Our account of it is necessarily partial.

The first lecture illustrates a subject of acknowledged importance, "The necessary connexion between observation and reasoning in medicine." It explains the imperfections of both theory and experience, where one is unassisted by the other; and

points out at full length the errors incident to those who have acted exclusively as empirics or dogmatists.

Of equal utility in directing the labours of the student are the subsequent lectures, "On the influence of physical causes in promoting the strength and activity of the intellectual faculties of man." Lect. 4.—"On the education proper to qualify a young man for the study of medicine." Lect. 7.—And "On the means of acquiring knowledge." Lect. 15.—These discourses are replete with excellent observations on the economy and culture of the human mind. It may not here seem our place to arraign the author for his disposition to depreciate classical literature, and for the preference which he gives to the French, German, and Italian languages over the Latin and Greek. In the character of physicians however we cannot refrain from expressing an unqualified opinion in favour of an early and thorough acquaintance with the ancient languages as a part of a medical education. Many of the most valuable and standard works in our profession must be inaccessible to those who are destitute of this acquaintance. Omitting a crowd of ancient authors, we would ask, what medical scholar would not be ashamed of an inability to consult the untranslated writings of Haller, of Lieutaud, of Stoll, De Haen, Gregory, and many others of recent date? But in addition to the advantage of access to valuable authors, there is another object still more indispensable. The Latin has been, and will continue to be, the language of scientific men, and the medium of technical phraseology. We know of no substitute for the facility afforded by a classic education in comprehending and retaining the peculiar names with which all sciences abound, and especially those connected with medicine. The number of technical terms in anatomy, chemistry, and medicine proper, which proceed from the Latin and Greek, is several thousand; in natural history it is almost infinite. How inconceivable must be the labour of committing to memory the import of such a collection of strange and novel sounds, did not their etymology convey to the mind some idea of their meaning and application. Besides, we know of no modern language whose precision will admit it to be substituted for the Latin, as the language of learned men. We would ask if it be possible that the systems of

Linnæus could be preserved in any translation, were the original nomenclature of that great man to be lost. Would not incessant confusion and variance result from attempts at translation into any existing words in any modern language? We will give a single example in the instance of two species of plants belonging to the same genus, the Solanum tuberosum, and the Solanum mammosum. These two might naturally enough be rendered in English by the same name,* and we should thus confound a common article of food (the potatoe) with a virulent narcotic poison. But perhaps we are proceeding to improper lengths. Our author has the good fortune to coincide in opinion with the French emperor, whose innovating genius, it is said, has found it expedient that physicians' prescriptions should no longer be written in Latin. At the same time he disagrees with the authority and usage of nearly all the medical seminaries in which our language is spoken.

In the fourth lecture, on the influence of physical causes on the intellectual faculties, Dr. R. gives us an interesting detail, supported by facts and anecdotes, of the various external circumstances which tend to sharpen and invigorate the human intellect. We must however remark, that an indiscriminate collection of different facts, without a full and judicious application of them, seldom leads to useful conclusions. In the present instance we learn that abstinence in many persons increases mental activity; that in others a full and gross diet has had the same effect. That the noise and bustle of large cities promote strength and vigour of mind, and in the next section that silence and solitude are no less efficacious. We do not derive very definite instructions in the choice of a position for study, when we are told that Descartes, Mr. Brindley, and Rousseau, studied in *bed*; that Charles Townsend, Judge Wilson, and Sir Joshua Reynolds, had the best command of their faculties in a *standing* posture; that the Peripatetics studied and taught while *walking*, and that Mr. Edwards and others had their ideas wonderfully excited by

* The adjectives "tuberosum" and "mammosum" might each be rendered in English "tumid, rounded, or bunched." That they originally conveyed an idea of similar shape, we have the following authority from Apuleius. "Ubi uber, ibi tuber."—But enough of pedantry.

riding. We are here too a little surprised that the *sitting* posture, in which probably more mental achievements have been effected than in all the rest put together, it being the common posture of literary men; is passed by altogether unnoticed. In one instance, we mean that respecting abstinence and repletion, Dr. Rush has applied his facts by intimating that those persons, whose minds were improved by indulgence in food, were men subject to great depression of spirits, whose minds required the pleasures of the table to raise them to the ordinary grade of vigour. We should have been gratified had explanations been more frequent. The habits and idiosyncracies of different individuals undoubtedly require different aliments, situations, and pursuits; and these are commonly adjusted by each from the dictates only of his own experience. It would be an attempt worthy the talents of Dr. Rush, to inform us in what circumstances an erect or recumbent posture, an active or quiescent state, is most favourable to mental exertion; to explain what peculiarities require or forbid certain medicinal agents; to state in what cases a glass of wine shall rouse and invigorate the mind of one man, while it bewilders and depresses that of another; or, in fine, to make each individual so far acquainted with his own mind and animal spirits, as that he may be able to adapt his habits to their greatest economy and improvement.

Many of the lectures contained in this volume are calculated to be of singular utility in illustrating the connection which exists between the medical profession and the rest of society; in establishing their mutual duties, and fixing on both sides the standard of a correct and discriminating conduct. Such are the lectures "On the vices and virtues of physicians," "On the means of acquiring business, and the causes which prevent the acquisition and occasion the loss of it in the profession of medicine," "On the pains and pleasures of a medical life," "On the duties of patients to their physicians," &c. They seem to be the productions of a man, whose vigilant attention has not been eluded by any of the incidents and contingencies of a medical life. They are copiously illustrated by facts and examples, collected not only from the fruits of extensive reading, but also from a careful preservation of noticeable occurrences during long and extensive practice.

The manner of Dr. Rush is clear and methodical. His practice of arranging the various particulars which compose his subject under numbered heads, covers the occasional abruptness of his transitions, and assists the recollection of the reader. In the exordium and conclusion of his lectures his language is generally elevated, and in some instances highly captivating and pathetic. Were we solicitous to discover faults, we should say that the transitions from one part to another of the subject, are too frequent, and occasionally produce an abrupt and unpleasant change of manner.—As a fair specimen of the author's style, we give the following extract from the conclusion of the lecture on hospitals. "In recounting the public advantages of our hospital, let us not pass over in silence the individual comfort and happiness it has created and prolonged. There oil and wine have been poured into many bleeding hearts. There deposed human reason has often been brought back again by the power of medicine to resume her empire over all the faculties of the mind. Receive, illustrious founders of this excellent institution, in this humble detail of its various and multiplied blessings, the rewards of your beneficence! But great as those blessings appear, they are small, compared with the benefits which have been ascribed to hospitals in other countries. Dr. Tillotson has pronounced them to be the bulwarks of Great Britain, and ascribes to their influence her frequent and signal preservations from the power of her enemies. Higher motives remain yet to be mentioned, to recommend these public asylums of sickness and distress to our affections and care. The Saviour of the world owns the miserable outcasts of society, who occupy the wards of hospitals, as his relations, and has declared he will reward acts of kindness done to them as if they had been done to himself. His memorable words shall conclude our lecture. I was sick, and ye visited me; and again, Inasmuch as ye have done it unto these my brethren, ye have done it unto me."

We believe that few popular works connected with medicine can produce greater interest, or promote more liberal and enlightened views of the profession, than this volume of introductory lectures. Our duty as reviewers, and our selfishness as physicians, obliges us to express the warmest wishes for its general circulation and perusal.

ARTICLE II.

A Dissertation on the proximate cause of Inflammation, with an attempt to establish a rational plan of cure. Submitted to the examination of John Andrews, D. D. Provost, the Trustees, and Medical Professors of the University of Pennsylvania, on the twenty fifth of April, 1811. *For the Degree of Doctor of Medicine. By Alexander H. Stevens, A. M. of New York. Honorary member of the Medical Society of Philadelphia, and member of the Philomedical Society of New York. Medicus et Philosophus in omnibus quæ circa corpus humanum eveniunt mutationibus, ex claris principiis veras conclusiones et connectiones conficere et elicere debet....FRED. HOFFM. Principles in medicine are the only safe and certain guide to successful practice.... RUSH.* Philadelphia; J. Maxwell. pp. 37. 1811.

AN inaugural dissertation should not, perhaps, be reviewed on the same footing as other works. It is for the most part the production of a young man who has just completed his pupilage. Proofs of industry, and of a judgment ordinarily good, are all that we have a right to look for. Should the work evince unusual labour or ingenuity, it is entitled to special praise.

Claims to such special praise are to be found in the work before us. The author has certainly taken considerable pains in the investigation of his subject. He has ventured to look into the massy volumes of antiquity, as well as into the writings of modern times; and he has also gone through some interesting experiments.

This perhaps is as much as it can generally be necessary for us to say respecting works of this kind. It cannot be requisite for us to state in every instance in what respect and how much we differ in sentiment from the author. But, in truth, some new doctrines have been springing up on this subject of inflammation; and these are embraced by Dr. Stevens. Now we are tempted to make use of this occasion to go into an examination of these doctrines. If we should not agree with Dr. S. in as-

senting to them, he will not be displeased, since we leave him in good company, and perhaps in a growing party. We are assured, however, that he, as well as ourselves, has no other object than to ascertain truth.

The prevailing opinion in these latter times has been, that in inflammation arterial action is increased. Respecting the larger arteries, we believe it is admitted on all sides, that when they are affected at all, their action is increased, as regards both force and frequency. It is commonly supposed that the same is true as to the capillary vessels; the vessels immediately engaged in performing the functions of inflamed parts. Some have gone so far as to suppose that inflammation consisted in this increased vascular action. Such might seem to be the opinion of Mr. Hunter, if it were fair to take a single sentence from his book as proof, and not to judge from the whole of his remarks taken collectively. Chap. III. sect. 1. of his treatise on inflammation begins with this sentence: "The act of inflammation would appear to be an increased action of the vessels." And in sect. 7. of the same chap. he states that in inflammation there is either a real increase of animal life, or an increased disposition to act with the full powers which the machine is already possessed of. From some circumstances he inclines to suspect that the latter is the case.

On the other hand, it is the opinion of Professor Vacca Berlinghieri, and of others since his day, that inflammation is a state of relative debility of the small vessels. This opinion was proposed in Edinburgh as original by Dr. Lubbock and Mr. Allen, in 1790; and doubtless they were ignorant that the Italian professor had previously expressed the same; for we suspect that the opinion of Vacca was little known in Great Britain till the learned editors of the Edinburgh Medical and Surgical Journal* published it there. The doctrine has since been avowed by others, and has been particularly defended by Dr. Wilson.†

It would seem, from attending to all the experiments and remarks of Dr. Wilson, and Dr. Stevens, that they believe the actions of the capillaries to be diminished in force and frequency, as well as that the power or energy of these vessels is lessen-

* Vol. 2. p. 79. † On Febrile Diseases, vol. 3.

ed. They seem, indeed, to argue the diminution of power from the diminution of action. We are therefore to keep both the ideas in our minds in the discussion of this subject.

But the author of the dissertation before us does not believe that inflammation consists only in the debility and diminished action of the small vessels; for he says, "surely no alteration in the degree of action could give rise to secretion, in which inflammation so often terminates." Something must be added to the debility and diminished action, or, in his opinion, an explanation will be wanting in regard to a process, which occurs in perhaps every case of that disease. We certainly agree with him that a debility, or a want of excitement relative or positive, will not occasion this process. Dr. Stevens accordingly defines "inflammation to be a state of relative debility of the small vessels, *attended by morbid action.*"

Now we must ask Dr. Stevens, what is meant by morbid action. Is not this expression applied to an action of the sanguiferous vessels, differing in kind from the actions of the same vessels in health? We presume that Dr. S. would reply in the affirmative. May this be any action different from the healthy action, or is it supposed that this morbid action, which exists in inflammation, has some characteristics of its own, and is of a peculiar kind? The latter opinion will no doubt be admitted.

We are not making Dr. S. concede more than we suppose him willing to do, nor indeed more than may fairly be inferred from passages in his dissertation. He does not pretend to give the characteristics of the morbid action, which attends the debility of the small vessels, and we therefore shall not pursue that inquiry. But we will now ask, why this unknown something may not constitute the whole essence of inflammation, as well as part of the essence? There cannot be any objection to this, unless the other part can be proved to be necessary. If it is certain that deficiency of either energy or action in the small vessels is essential to inflammation, we may then perhaps adopt the opinion of Dr. S. as the best which has been offered. How far such deficiency has been proved to be essential, it now remains for us to inquire.

We should be glad to proceed in this inquiry without delay; but as others have been entangled in the investigation of this subject, we mean to take warning, and to try to keep ourselves clear.

As our inquiry relates to the proximate cause of inflammation, it is proper that we should ascertain what is meant by a proximate cause. By this phrase, pathologists commonly understand that change in the body, from which arise all the symptoms to be discovered in the disease; whether this change consist in an alteration of the solids, or of the fluids, either in their composition or actions. This opinion seems to be adopted by Dr. S. in the following paragraph.

"If, in this general view of the subject, the existence of one common cause be shown to be necessarily connected with the phenomena which take place; if a succession of effects can be perceived, which can be traced to such common cause, no one will hesitate to believe that this is the *essence* of inflammation." p. 8.

But of what use is it to ascertain this "common cause of the phenomena," this "proximate cause" of inflammation? Pathologists have evidently attached great importance to this inquiry, because they have meant to found their method of treatment on the knowledge of this cause. If this cause be only the first in a series of events, each of which ceases to exist as soon as the other is produced, an acquaintance with it would be just as important, as an acquaintance with any other event of the series, and no more so. But another idea has really entered into their notion of a proximate cause, though not usually adverted to, viz. that it should continue in existence after having produced the symptoms of the disease; nay, that its existence should be necessary to the continuance of those symptoms. Accordingly, they have promised themselves, that whenever they could remove the proximate cause of a disease, the symptoms, and indeed the whole disease would be removed of course.

This explains what might otherwise seem singular in the opinions of Dr. S.—He, in describing the process of inflammation, states, that first a stimulus is applied to the small vessels, and the effect of this is an excitement of those vessels; they

contract themselves, expel the blood, and are for a time in a state which he calls *anaimatous*. An excitement, then, is the first effect on the capillaries produced by the remote causes of inflammation. This should be considered the "common cause" of the phenomena; the proximate cause of the disease, according to the principles laid down by Dr. S.—But he does not consider it so, and that for the very obvious reasons we have stated above. In truth he believes this *anaimatous* state to be transient, and that another state ensues, which, in his opinion, becomes permanent, by which the subsequent phenomena of the disease are produced, and on which they continue to depend.

We have now then arrived fairly at the question, "is deficiency of either energy or action in the small vessels essential to inflammation?"—*to its production and continuance*, so that when this is removed, inflammation shall cease?

To support the affirmative of this question, two sorts of proof are offered. First, Dr. Wilson and Dr. Stevens have both instituted experiments on transparent portions of living animals; they have excited inflammation in these parts, and they have examined them by the microscope. These gentlemen report, that in the inflamed parts the small vessels become crowded with blood, and that their action is evidently diminished; indeed Dr. Wilson states, that "in several places where the inflammation was greatest, it (the motion of the blood) had ceased altogether."*

Secondly, the debility of the small vessels is inferred from their dilatation; for it is said that if they were not wanting in energy, at least in proportion to the larger vessels by which the blood is propelled into them, they would contract upon their contents, and be reduced to their ordinary size. This was the argument of the Italian professor.

Let us examine these proofs, and see if they are as conclusive as they have appeared to be to their authors.

First, as to the experiments. There is something imposing in testimony of this sort, and it seems almost unreasonable to

* On Febrile Diseases, vol. 3. p. 45.

question its authority. We feel assured that the experimenters have meant to report fairly what they saw. But, perhaps from our ignorance on the subject, we must acknowledge a want of confidence in microscopical observations. We cannot forget how much we were gratified during our pupilage in reading Boerhaave's institutes, in which we were taught the microscopical discoveries of Lewenhoec and his contemporaries. But, when we were afterwards informed that the philosophers had been painting what they imagined, and not what they saw, it shook, perhaps unreasonably, our faith in microscopical observations on subjects of this sort.

Are there not some things in the experiments themselves, as related by Dr. Wilson and Dr. Stevens, arising from the nature of them, which rather tend to favour our incredulity. The experiments were made principally on the web of a frog's foot, because it was transparent. Perfect transparency is necessary to the fair and accurate observation of the action of the vessels. Had there been presented to either of these gentlemen a frog, of which, from any cause, the web was less transparent than usual, he would have rejected it as unfit for experiment. But what happens when inflammation is produced? The web then becomes opaque; and, in proportion as the inflammation increases, it becomes more thickened and more opaque. In this state of the part is it possible to ascertain with certainty the relative velocity of the motion of the blood? Does not the change, which has been produced, render the inflamed portion of the animal an unfit object for microscopical observation?

It will be said that these gentlemen did see the motion of the blood in the inflamed spots, and did see that it was less rapid, than in the sound parts. But might they not have been deceived from this cause; that the motion of the blood in the transparent parts, was perfectly visible and presented to the eye a very lively picture; while that in the opaque parts, being imperfectly seen, seemed to move slower? From our own experience we should doubt the ability of any man to measure the velocity of the blood in experiments of this sort, with any considerable degree of cer-

tainty.—But, perhaps, we may be called bunglers;—a charge which we shall not trouble ourselves to refute.*

Let it however be admitted that there was not any deception in the experiments. What do they prove? Do they prove to us that the vessels were debilitated in the inflamed spots? Certainly not; they only show that the rapidity of circulation was diminished.—They show that in those stages of inflammation, at which the observations were made, the contractions of the capillaries were lessened in frequency.

Secondly, the debility of the small vessels is inferred from their dilatation.

This argument is founded on the opinions that contraction is the only vital action, which the blood vessels are capable of; and that, when they are dilated, it must be because their contractile power is overcome by the *vis a tergo* of the fluids, or by their own elastic coats, whose action is not vital.

In these opinions, perhaps, a large portion of physiologists would coincide. They are, however, opinions, which, after due consideration, were dissented from by Mr. Hunter. It is somewhat remarkable, that neither Dr. Wilson nor Dr. Stevens have met Mr. Hunter's arguments, and given them a fair consideration, especially as they have both of them made free use of his observations generally, and more particularly of those on the structure of the arteries, and on their mode of action in health.†

This is a subject on which Mr. Hunter thought with his usual accuracy, and wrote with his usual obscurity. In examining the operations of the living body, he observed that muscles had not only a power of contraction, but that they had also a power of elongation. By this he did not mean the cessation of contraction, but an active principle dependent on vital energy. By this principle he believed that muscles "have a power of becoming longer, almost immediately, than they are in the natural relaxed, or even the natural elongated state of their fibres." "Relaxation," he says, "is not the state, into which a muscle will naturally fall upon the removal of a continued stimulus; a

* We ought, perhaps, to say, that we have not doubted the accuracy of the experiments referred to, without having ascertained by repeated trials the difficulty of being accurate in experiments of this sort.

† Wilson on Feb. Dis. vol. 3. p. 25. note.

muscle remaining contracted after absolute death, when the stimulus of relaxation cannot be applied; so that a muscle can as little relax after death as it can contract." See his treatise on inflammation, the blood, &c. Part I. ch. II. sect. 1. in which and the following section, his opinion is illustrated and supported. It is not easy to give a copy of his remarks within our limits, and it is impossible to give an abstract of them; for they are very much condensed by him, and are connected with other important views of the animal œconomy, which were necessary to the display of them.

In Part II. ch. III. sect. 1. of the work above quoted, he applies this doctrine to the vessels in inflamed parts. He had not omitted to observe the enlargement of the capillary vessels in such parts; and he endeavoured to ascertain the cause of this enlargement. His decision is expressed in these words: "We must suppose it something more than simply a common relaxation; we must suppose it an action in the parts to produce an increase of size to answer particular purposes; and this I should call the *action of dilatation.* Just so we see the *uterus* increase in size in the time of uterine gestation, as well as the *os tincæ* in the time of labour, the consequence of the preceding actions, and necessary for the completion of those which are to follow."*

* It is possible that the ideas, which have been expressed, respecting the muscular relaxation of the capillaries, will appear obscure. It is an enlargement of the muscular coat, but not a growth, for there is not any addition of substance to the part. It is the opposite of contraction, inasmuch as it enlarges the caliber of the vessel, while contraction diminishes it. The muscular fibres become permanently elongated during the continuance of the inflammation, but not debilitated; they do not lose the power of contraction. This power they continue to possess, and to exercise in their elongated state.

If we be asked how a muscular fibre can perform this sort of relaxation or elongation of itself, we reply that we cannot tell. We believe in the existence of this power, as we do in that of contraction; and we will undertake to explain the mode in which it is exercised, when we are satisfied in what mode contraction is performed.

Can any one tell us how a stimulus produces contraction in muscular fibres? Every tyro will probably be ready to smile at the question. But, when the circumstances of this phenomenon are carefully examined, it

It is perhaps true, that the hypothesis of debility in the small vessels is the only one which will explain their enlargement, if we except Mr. Hunter's. The choice lies between the two. We have given a view of Mr. Hunter's, and we will now close this article by some remarks on inflammation, with a view particularly to the doctrine of debility.

What is the character of the actions performed in parts suffering inflammation? After a wound, the vessels of the part not only carry on those processes necessary for the support of life in it; but, in addition, they establish and conduct new processes for the restoration of the part to a sound state. The processes necessary for this purpose, when the divided parts are kept separated from each other, constitute the affection called inflammation. A new structure is raised by the capillary vessels in the parts surrounding the wound, and new secretions are established. Both fluids and solids are the products of the small vessels labouring in their new offices. Adhesion, suppuration, and incarnation, follow in regular succession.

Likewise in an abscess, and in certain specific inflammations, as the syphilitic, variolous, vaccine, &c. we find the inflamed parts assuming in each a peculiar organization; and we find in each of them processes are performed, apparently more difficult and more complicated than in health.

Can we, when viewing these processes, believe that debility of the very vessels, by which these remarkable changes are wrought, is essential to their production?

These vessels are enlarged, and even distended; so also in many cases are the large vessels which lead to them; but the advocates for the new doctrine do not pretend that there is a diminution of either energy or action in these large vessels. On this subject Mr. Hunter remarks, that "every part increases in some degree according to the action required."* He states

will, we believe, be found to be an ultimate fact, which we cannot explain any more than we can explain the principle of gravitation. If then we know not how applications operate to produce muscular contraction, nor how the contraction itself is performed, we certainly are not authorized to say that this muscular power is such as precludes the possibility of the existence of any other.

* Part II. Ch. iii. Sect. 2. Treatise on Inflammation, &c.

as instances, that "the vessels become larger in proportion to the necessity of supply in the gravid uterus;" and that "the external carotids in the stag, when his horns are growing, are much larger than at any other time."

The process of lactation, when it commences, the first time especially, resembles inflammation in many of its phenomena. Here both large and small vessels undergo "the action of dilatation;" and here also new functions are performed. Can it be supposed that debility in any of the vessels is necessary to produce the changes, which we witness in this process? Does any man doubt that the small vessels of the mammæ are dilated in these cases? And is there not every proof of debility in them in this case, which there is in inflammation.

Surely there is a wide difference between the enlargement of vessels, engaged in the performance of new and unusual functions, and the dilatation of varicose veins, or the distention of the capillaries, in cases of congestion. In inflammation we see mechanical, and we see chemical changes wrought; but they are not produced upon mechanical and chemical principles. The small vessels do not undergo enlargement merely because the blood is pressed into them, any more than the blood is changed into pus merely by the application of heat, or by putrefaction.

While we oppose the opinion, which Dr. Stevens has advanced respecting the proximate cause of inflammation, we would not be understood to take the opposite ground. It does not necessarily follow that there is increased energy, because there is not debility. It does not appear to us that any change in this respect is absolutely necessary to inflammation. But so far as there is a change, the phenomena evince rather an increase, than a diminution, both of energy and of action.

It appears to us that one change is always produced in inflammation, and is peculiar to it. A new organ is formed; or at least a new organization. There is a change of structure, of disposition, and of properties or powers, in the part inflamed. It is while parts are undergoing this change, or assuming this new organization, that the most striking phenomena of inflammation occur. It is then that pain and tumor, and heat and redness, are noticed in the greatest degree. It is at this time

that the vessels are largest, for then they require the most blood; in the same manner as it happens when the mammæ first begin to secrete milk. When the secretion is well established, the fullness of the vessels ceases; and the same happens in inflamed parts, as soon as suppuration, or any analogous process, has taken place.

But fortunately we are not called upon to explain the phenomena of inflammation, and in relation to the pamphlet before us we have certainly gone far enough.

ARTICLE 3.

A Letter to Dr. Jones, on the Composition of the Eau Medicinale d'Husson, by James Moore, Member of the Royal College of Surgeons. London. 1811.

THE English public have been much interested of late in attempts to ascertain the composition of this secret French medicine. For these attempts they have had no small inducements, since they believe that this medicine will cure the gout, while it costs from one to two crowns a dose.

To this popular subject Mr. Moore has given his attention, and as we hope not in vain. In the investigation he has displayed an ingenuity and accuracy, which render his work peculiarly worthy our commendation. It remains to be decided by repeated experiments whether Mr. Moore's medicine will afford that relief to the gouty, which is attributed to the Eau Medicinale. Suffice it to state that he has succeeded in compounding a medicine closely resembling the Eau Medicinale in smell, taste, and dose; in its evacuant powers, and finally in its property of relieving the gout, so far as it has been tried. This medicine, whose identity with the specific is thus presumed on, is composed of three parts of the wine of white hellebore, and one of wine of opium. The above wine of white hellebore is prepared by infusing for ten days eight ounces of the sliced root of that plant in two pints and a half of white wine. The dose of the compound is from one to two drachms.

INTELLIGENCE.

SPINA BIFIDA.

Few diseases incident to the human subject have been so generally fatal as that known by the name of spina bifida. This disease, which has also the name of *divided spine*, *spinola*, and *hydrorachitis*, has been thus described. It proceeds from malconformation of the spine, originating with the fœtus. The spinous processes, and sometimes the lateral processes, of some of the vertebræ, are found wanting; the consequence of which is, that that portion of the spinal marrow which occupies this part of the spinal canal, is here in part deprived of what usually and naturally should constitute its protection. This deficiency takes place in various parts of the spine, but most frequently about the loins and sacrum. The common integuments are frequently found wanting where these deficiencies of bone exist, and the spinal marrow is found covered merely by a very thin tender skin, and so transparent that the contents may be seen through it. This coat has been considered by some writers on the subject the dura matral coat of the medulla spinalis.

The common integuments sometimes are perfect, of their natural thickness and opacity. From this difference in the coverings of the tumour, Okes, who has written on the subject, divides it into two kinds, *transparent* and *opaque*.

The tumour which is found to characterize this disease, contains a clear fluid, and from its resemblance to the lymph which is found in the ventricles of the brain, it has obtained the name of hydrorachitis. There is another shape under which the disease appears. In this the fluid and duramatral coat is forced through a small separation of the spinous processes of the vertebræ, but in which they are not at all wanting.

Tulpius Ruysch, Morgagni, Abernethy, with many others, have treated on this disease; and Ruysch has given us some

very interesting cases on the subject. These authors, however, except Abernethy, agree that death must be the inevitable consequence of opening the tumour; for they had all found, that whether from accident or design this was done, death very shortly followed. Mr. Abernethy doubted the truth of the generally received opinion that, to use his own words, "the imperfect formation of a part so essential, implies a deficiency in the constitution;" and again, "want of vigour of constitution might cause debility in any part, but could not cause an error of formation. We have seen very healthy infants who have been thus imperfectly formed, and whose health has sustained but little derangement till the tumour has burst, when they have perished from the inflammation which unavoidably ensues." As this disease is so generally fatal, to give the subject of it all possible chance, Mr. Abernethy proposed that either by pressure the fluid might be absorbed, and the cavity thus filled up, or by a finely cutting instrument a puncture should be made, and union by the first intention being produced, an attempt to repress a future collection by bandage, or by those topical applications which appear best adapted to this purpose should be made. This plan of treatment was suggested by the success which had attended a similar one adopted in cases of lumbar abscess. In Mr. Abernethy's second publication on this subject accordingly we are informed, a case having occurred, the operation was performed, but from circumstances little could be hoped for from any means, and the case was fatal. The puncture in this case was repeated ten times, and readily healed, the child's health remaining unaffected. The skin, however, from irritating applications to affect absorption, had become thickened, and as inelastic, says Mr. Abernethy, as the upper leather of a shoe; it also ulcerated. Accident removed one of the plaisters from a puncture before it was healed, and it never after could be brought to heal. Pus was formed in the sac, and the infant died. Examination after death discovered other circumstances connected with the disease, which would have accounted for the fatal issue of the case. But the chief and most embarrassing circumstance was this; that the skin forming the sac "fell into

wrinkles when the fluid was let out, and shewed no disposition to contract."

Mr. A. concludes the case with this remark: "Where the integuments are sound and naturally elastic, and where the malconformation consists merely in a defect of a spinous process, I entertain hopes that a gradual contraction may ensue, if it be occasionally emptied and moderately compressed."

In some good measure the hopes of Mr. Abernethy are already realized. In May, 1811, three cases of spina bifida were exhibited in the operating theatre of Guy's Hospital, London, by the justly celebrated Mr. Astley Cooper. The children were in perfect health, and as lively as any infants of their age; one was about 16 months old, one between two and three years, and the third had completed its fourth year. In all these children the tumour had been frequently tapped. In one, the operation had been performed *fifty two* different times. The operation consists in a puncture into the tumour, made by a packthread needle, after the same manner as Abernethy recommends the use of the trocar in lumbar abscess. The fluid being thus evacuated, pressure is immediately and constantly applied by means of an exomphalos truss, the pad being applied to the sac. One case exhibited in the spot where the tumour had been, the appearance of a navel, the diminution and contraction of the tumour having given the part that appearance. In these cases, so far was pressure from producing any unpleasant effects, as coma, paralysis, &c, it was and is found that removal of the truss is always attended with evident restlessness and other bad symptoms. This is not agreeable to what is affirmed to have taken place in some cases communicated to the author of Zoonomia, viz. "that in compressing the tumour gently with the hand, the whole brain becomes affected, and the patient falls asleep." Nor to Mr. Washburn's case, recorded in the Medical and Physical Journal, for January, 1809, in which paralysis of the lower extremities was present, and pressure being made on the tumour the fontanelle became distended; and when the hand was placed on the anterior fontanelle, there was the same undulation in the tumour on the loins, clearly indicating a free communication between the tumour and the head. Circumstances there-

fore, may render it impossible to avail ourselves of the advantage to be derived from constant pressure. Mr. Cooper considers spina bifida to be a hernia of the sheath of the medulla spinalis, the consequence of a defect in the bony structure of the spine. In the above mentioned cases, the common integuments were not wanting; hence the punctures healed readily, and we have mentioned that pressure was very tolerable. In one case, however, slight coma supervened on its first application, but this soon went off.

In a case which proved fatal, after this treatment, on dissection the part formerly the seat of the disease was found filled with a mass of organized fleshy matter, and thus the spinal marrow perfectly protected, this mass supplying the place of the spinous processes.

These cases will appear in the next number of the Medico Chirurgical Transactions.

We have in the course of these remarks mentioned a work on spina bifida, written by Mr. Okes, surgeon at Cambridge (England.) He is opposed to puncture, or pressure. He grounds his opposition, first, on the injury done the dura mater, the sheath of the medulla spinalis being in fact a continuance of that; secondly, on the non-contractility of this coat, and the skin when that forms the sac; and thirdly, on the inflammation which must follow the pressure necessary to produce absorption, and the extreme improbability of that process being induced, from the extreme thinness of the coats.—Experience has however proved them not necessarily sufficient grounds for preventing the operation. And one would think that the analogies which may be furnished would have much weight in suggesting the propriety of the new mode of treatment. Wounds are certainly made in the dura mater itself in some injuries of the head, and in some cases no fatal inflammation has supervened. As to the objection to pressure, it will not have much weight if we for a moment reflect that the sac is constantly suffering it to the utmost degree from the contained fluid, and this fluid we do know is daily increasing in quantity. Now pressure properly applied is a support by its counter operation on the distending fluid; and if it be applied to such a degree as to

prevent farther distension of the sac, such tone may be given to the vessels about the part, as that they may not secrete an undue quantity of fluid, or to the absorbents as will enable them to remove an undue quantity. Thus the natural process of restoration of parts will take place, as was found to be the case, in the instance we related of the child who died from some other disease, and as, in all probability, is the case, in the three living instances.

We have no doubt but with such data to proceed on, this operation will be attempted, and flatter ourselves that if performed with due caution the disease of Spina Bifida may cease to be an opprobrium of medicine.

Dr. Joseph Adams, the celebrated author of the work on Morbid Poisons, has this year opened a Course of Lectures in London, "on the Institutes and Practice of Medicine." We have seen the Syllabus, which he has issued, by which it would seem that he grounds his "Institutes" on those fundamental principles, which were pointed out by Mr. Hunter. Those who have remarked the philosophic display and happy elucidation by Dr. Adams of the important truths discovered by Mr. Hunter on the subject of morbid poisons, will judge how valuable must be the lessons taught by this new lecturer. But Dr. Adams is not to be considered merely as the interpreter of Mr. Hunter. In his description of the Yaws and Sibbens, and still more in his valuable work on Epidemic Diseases, the medical world may see evidence of the greatest accuracy in description, and of the utmost ingenuity in developing the laws of nature.

Mr. Henry Cline, so long distinguished as an able surgeon and lecturer on anatomy in St. Thomas' hospital, is, we are informed, declining rapidly in health. His situation as lecturer will probably be occupied by the distinguished surgeon, Mr. Astley Cooper, or by Mr. Cline, jun.

Mr. Cooper is preparing a second edition of his work on Hernia.

Mr. John James Watt has published two fasciculi of his anatomico-chirurgical views. The second fasciculus which has just reached us, contains two views of the bones of the pelvis, one of the male, the other of the female; three of the male organs of generation, and three of the female. They appear to be correctly copied from nature, and are elegantly engraved. The muscles of the urethra, described by Mr. Wilson, are very distinctly exhibited.

Mr. Watt will publish early this year (1812) "A new description of the muscles of the human body, accompanied with about fifteen engravings of the principal muscles, from drawings lately taken from the subject by Lewis." This work will also contain a table of those organs arranged according to the various actions in which they are employed; and, at the head of the account given of each individual muscle, a new name, formed from the attachment of the muscle, will be placed, together with the synonyms of some preceding authors.

Dr. Thornton is disposing of his valuable collections on Botany, consisting of the whole impression, with the plates, drawings, and letter press, of the illustrations of Linnæus, the collection of portraits of celebrated botanists, the copy rights, &c. &c. of his various publications on the same subject, by way of *Lottery*. The excellence of many of the portraits as paintings, independent of the subject; the taste displayed in the botanical drawings, most of them by Reinagle; the immense sum expended in making the collection, and on its publication, certainly entitle Dr. Thornton to a patronage, in which, we hope, he will find an ample remuneration.

Med. Phys. Journal, Oct. 1811.

Dr. Titford has in the press, and proposes to publish in six numbers royal quarto, "Sketches toward a Hortus Botanicus Americanus, or coloured plates of plants of the West Indies, and of North and South America," with concise and familiar

descriptions, (and noticing many plants of Africa and the East Indies, which might be introduced into the West Indian colonies with advantage) arranged after the Linnæan system, with their botanical and various English names; and the names of the most common and useful also in French, Italian and Spanish, containing information of their virtues and uses, with novel and interesting particulars as to transatlantic botany in general. Collected and compiled during a residence in the West Indies, and a tour through the United States of America.

Ackermann's Repository, *Oct.* 1811.

A paper on the alcohol of wine has been read to the Royal Society by Mr. Brande. He gave a table of the quantity of alcohol contained in various wines and malt liquors; the highest was that of Marcella wine, which contained 26 per cent. of alcohol; Red Champaigne 20; Port from 20 to 24; Madeira 19; Claret 15; Cyder and Perry 12; Ale 9; Brown Stout 8; and Porter 6.

A piece of amber, 14 inches long, 9¼ broad, and weighing 21 pounds, was lately found by a Russian soldier between Memel and Konigsberg. It is confessedly the largest piece ever seen, exceeding in size and weight the one found in the Prussian territories in 1804. *Monthly Mag. Oct.* 1811.

Mr. Brodie, author of the experiments on the influence of the brain on the heart, has since communicated to the Society for promoting the Knowledge of Animal Chemistry, some very interesting experiments and observations on the different modes in which death is produced by certain vegetable poisons. From these experiments he deduces the following results.

1. That alcohol, the essential oil of almonds, the juice of arconite, the empyreumatic oil of tobacco, and the woorara,* act as

* A poison with which the Indians of Guiana arm the points of their arrows.

poisons by simply destroying the functions of the brain; universal death taking place, because respiration is under the influence of the brain, and ceases when its functions are destroyed.

2. That the infusion of tobacco, when injected into the intestine, and the upas antiar, when applied to a wound, have the power of rendering the heart insensible to the stimulus of the blood, thus stopping the circulation; in other words, they occasion syncope.

3. There is reason to believe that the poisons which in these experiments were applied internally, produce their effects through the medium of the nerves, without being absorbed into the circulation.

4. When the woorara is applied to a wound it produces its effects on the brain, by entering the circulation through the divided blood vessels; and from analogy, we may conclude that other poisons, when applied to wounds, operate in a similar manner.

5. When an animal is apparently dead from the influence of a poison, which acts by simply destroying the functions of the brain, it may, in some instances at least, be made to recover, if respiration is artificially produced and continued for a certain length of time.

This interesting communication is published at length in several of the English journals.

Dr. Marcett, of Guy's Hospital, London, has, we understand, discovered an infallible test for arsenic. He detects it when existing but in the smallest quantities in any matter. The test and many interesting facts on the article will appear in the next number of the Medico Chirurgical Transactions.

The unrolling and explanation of the Manuscripts found in Herculaneum are pursued with much industry by Messrs. Rosini, Scotti, and Pessette. They have, under the patronage of the Neapolitan government, published lately some fragments of a Latin poem upon the war between Mark Antony and Augustus,

and a considerable part of the second book of Epicurus upon Nature; the above gentlemen do not despair of yet finding the whole treatise of this author. There has also been committed to the press a moral work of Pisistratus, the celebrated disciple of Epicurus; likewise some fragments of Colote upon the Lycidas of Plato and of Caniscus upon friendship. The entire work of Philodemus upon rhetoric, is at this moment in a state of forwardness. *Tilloch's Mag. Sept.* 1811.

Dr. Wistar, of Philadelphia, has just published the first volume of his System of Anatomy, a work which the medical public have expected with eagerness, and will receive with pleasure.

Mr. Godon, a distinguished chemist and mineralogist has established a manufacture of chemical medicines at Philadelphia. Specimens of tartrite of antimony and of sulphate of zinc, from this manufacture, which have been employed in Boston, seem to possess the properties of the best European articles of the same nature.

A stone was extracted from the urethra of an individual, who came to Boston for that purpose in November, which measured over its longest circumference six inches, and over the shorter four inches, and weighed one ounce and three quarters. It was situated within the bulb, and had been there accumulating during nine years. This person was accompanied by another, who was affected with stone in the bladder. The latter was operated on with the gorget of Desault, and four stones were extracted. The patient walked in the streets on the nineteenth day after. This is the only operation of lithotomy which has been performed in Boston during the last twenty five years.

A case of inguinal aneurism has been cured by Dr. J. S. Dorsey of Philadelphia, by tying the external iliac artery within the pelvis. This is the first time that this novel and important operation has been performed on this side the Atlantic.

Dr. Chapman, of Philadelphia, has published an account, substantiated by cases of the utility of the Polygala Senega in obstinate amenorrhea. He gives a decoction prepared by adding an ounce of the senega to a pint of boiling water, which is slowly reduced by simmering to the quantity of one third. If this excite nausea, he adds aromatics. His rule is to give four ounces of the decoction, more or less, during the day, according to circumstances; increasing it when the menstrual effort is expected, as far as the stomach will allow. To prevent disgust, it is omitted a week or two in the intervals of the menstrual periods.

RECENT BRITISH PUBLICATIONS.

A Paper containing the results of eleven years practice at the original Vaccine Pock Institution, No. 44, Broad Street, Golden Square, &c. &c.

Essays on the Changes of the Human Body at different ages, the Diseases to which it is predisposed in each period of life, and the Physiological Principles of its longevity. By Thomas Jameson, M. D. 8vo.

A Collection of Treatises on Sol-Lunar influence in Fevers, with an improved method of curing them. By Francis Balfour, M. D. 2d edition. 8vo.

A Treatise on Gout, containing the opinions of the most celebrated ancient and modern physicians on that disease; and Observations on the Eau Medicinale. By John Ring. 8vo.

History of the Walcheren Remittent, &c. &c. &c. By Thomas Wright, M. D. 8vo.

An Account of the ravages committed in Ceylon by the Small Pox, previously to the introduction of Vaccination, &c. &c. By Thomas Christie, M. D. 8vo.

A Letter to Dr. Jones on the composition of the Eau Medicinale d'Husson. 8vo.

A Posologic Companion to the London Pharmacopœia. By John Nott, M. D. 18mo.

A Letter respectfully addressed, &c. on the operation for Popliteal Aneurism. By A. C. Hutchinson, M. D. 8vo.

A Treatise on Surgical Anatomy. By A. Colles. 8vo.

Disquisitions in the History of Medicine ; part first, exhibiting a view of physic, as observed to flourish during remote periods in Europe and the East. By Richard Millar, M. D. 8vo.

Surgical Observations on Tumours and Lumbar Abscesses. By John Abernethy, F. R. S. 8vo. 4 vols.

Communications relative to the Datura Stramonium, or Thorn Apple, as a cure or relief of Asthma. 8vo.

Cursory Remarks on Contagious Diseases, and on Baths. By M. L. Este, Esq. 8vo.

A Letter to the Physicians and Surgeons of St. George's Hospital, on Mr. Davy's simple Galvanic Circles, considered as a topical assistant branch of medicine, &c. By Matthew Yatman. 8vo.

Anatomy of the Human Body ; by John and Charles Bell. 3d edition, in 3 vols. 8vo.

An Essay on some of the stages of cutting for the stone ; illustrated with an engraving. By D. B. Frye, F. R. S.

Natural History of the Human Teeth, with a Treatise on their diseases, &c. By Joseph Murphy. 8vo.

A Conspectus of the London, Edinburgh, and Dublin Pharmacopœias. By E. G. Clarke, M. D. 18mo.

RECENT FRENCH PUBLICATIONS.

Recherches physico-chimiques, faites sur la pile ; sur la preparation chimique et les proprietes du Potassium et du Sodium, &c. &c. &c. Par M. M. Gay Lussac et Thenard, membres de l'Institut.—2 vols. 8vo. Paris. 1811.

Traite de Pharmacie theorique et pratique contenant les elemens de l'histoire naturelle de tous les medicamens, leur preparations, &c. &c. Par J. J. Virey, &c. 2 vols. 8vo. Paris. 1811.

Nouvelles remarques sur les hernies abdominales ; par M. Lordat, chef de travaux anatomiques de la faculte de medicine de Montpellier. Montpellier. 1811.

Nouvelles observations recueillies sur l'Elephantiasis des Arabes, &c. Par M. Alard. Paris. 1811.

Essai de littèrature medicale, addresse aux etudians de la faculte de medicine de Strasbourg. Par D. Villars. 8vo. Paris.

Traite d'Hygiene appliquæ a la Therapeutique. Par J. B. G. Barbier, M. D. 8vo. Paris. 1811.

RECENT AMERICAN PUBLICATIONS.

A Treatise on a Malignant Epidemic, commonly called Spotted Fever, interspersed with Remarks on the Nature of Fevers in general, and with an Appendix. By Elisha North. 12mo. New York ; T. and J. Swords.

Observations on the Climate in different parts of America, compared with the climate in corresponding parts of the other Continent. To which are added, Remarks on the different Complexions of the Human Race, &c. By Hugh Williamson, M. D. and L. L. D. &c. 8vo. New York ; T. and J. Swords.

Observations on the Establishment of the College of Physicians and Surgeons in the City of New York, and the Proceedings of the Regents relative to that Institution. Communicated in a Letter to James S. Stringham, M. D. Professor of Chemistry in Columbia College. By David Hosack, M. D. 8vo. New York. C. S. Van Winkle.

An Inaugural Dissertation on Insanity, submitted to the public examination of the Trustees of the College of Physicians and Surgeons in the State of New York. By Theodric Romeyn Beck, A. M. Licentiate in Medicine of the Medical Society of the County of New York. 8vo. New York. J. Seymour.

An Inaugural Dissertation on the Use of the Digitalis Purpurea in the cure of certain Diseases ; submitted to the public examination of the Trustees of the College of Physicians and Surgeons, &c. By Thomas Edward Steell, of New Jersey. 8vo. New York. T. and J. Swords.

METEOROLOGICAL JOURNAL.

BY JOHN GORHAM. M. D. BOSTON.

FOR OCTOBER, 1811.

Day of	Thermometer.			Barometer	Wind.		Weather.	
	7 A. M.	3 P. M.	10 P.M.	3 P. M.	7 A. M.	10 P.M.	Day.	Night.
1	40.°5	51.°5	47.°	30.50	N.W.	S.W.	Fair.	Fair.
2	44.	59.	58.	30.39	S.W.	W.	Ditto.	Ditto.
3	55.	65.	57.5	30.28	N.W.	S.W.	Ditto.	Ditto.
4	58.	70.	66.5	30.39	W.	E.	Ditto.	Cloudy.
5	55.	58.	55.	30.15	N.E.	E.	Cloudy.	Ditto.
6	55.5	57.5	58.	30.33	S.E.	S.E.	Rain.	Cloudy.
7	56.	60.	57.	30.35	E.	E.	Cloudy.	Rain.
8	60.	69.5	68.	30.05	S.W.	S.W.	Rain.	Ditto.
9	68.	80.	68.	29.85	W.	W.	Rain.	Fair.
10	60.	61.	59.	30.06	N.E.	N.E.	Fair.	Fair.
11	64.	76.	74.	29.82	W.	W.	Ditto.	Ditto.
12	71.	81.	70.5	29.53	W.	S.W.	Ditto.	Cloudy.
13	63.	70.5	64.5	29.58	W.	N.W.	Ditto.	Ditto.
14	67.	69.	58.	30.	S.W.	Ditto.	Ditto.	Ditto.
15	56.	56.	52.	30.24	N.E.	N.E.	Rain.	Rain.
16	55.	60.5	66.5	29.85	N.E.	S.W.	Ditto.	Ditto.
17	50.	55.	49.5	30.15	W.	N.W.	Fair.	Fair.
18	43.	58.	45.5	30.12	N.W.	N.W.	Ditto.	Ditto.
19	57.	68.	63.5	29.87	S.	S.W.	Ditto.	Ditto.
20	64.	70.5	49.5	29.55	S.	N.W.	Rain.	Ditto.
21	38.	48.	40.	30.46	N.W.	N.W.	Fair.	Ditto.
22	37.5	52.	45.	30.45	N.W.	N.E.	Rain.	Rain.
23	56.	61.	53.	29.77	S.	N.W.	Fair.	Fair.
24	43.5	43.	40.	30.10	N.W.	N.N.E.	Cloudy.	Rain.
25	33.	36.	36.	29.70	N. E.	N.W.	Sleet.	Ditto.
26	36.	44.	37.	29.97	N.W.	N.W.	Fair.	Fair.
27	34.	52.	44.	30.17	N.W.	W.	Ditto.	Ditto.
28	42.	64.	52.	30.	W.	W.	Ditto.	Ditto.
29	49.	49.	44.	30.18	N.E.	N.E.	Ditto.	Ditto.
30	41.	49.5	47.	30.18	N.E.	E.	Cloudy.	Ditto.
31	51.	51.	51.	29.76	E.	S.E.	Rain.	Rain.

Quantity of rain, 3.90 inches.
Mean temperature, 55.°
Mean altitude of the barometer, 29.99.

METEOROLOGICAL JOURNAL

FOR NOVEMBER, 1811.

Day of	Thermometer.			Barometer.	Wind.		Weather.	
	7 A. M.	3 P. M.	10 P.M.	3 P. M.	7 A. M.	10 P.M.	Day.	Night.
1	50.°	50.°	45.°	29.50	W.	W.	Fair.	Fair.
2	39.	51.	43.	29.79	W.	W.	Ditto.	Ditto.
3	38.	50.	42.	30.05	N.W.	N.W.	Ditto.	Ditto.
4	36.	49.	39.5	30.17	N.W.	N.W.	Ditto.	Ditto.
5	35.	53.5	48.	30.07	N.W.	W.	Ditto.	Cloudy.
6	46.	51.	48.	30.08	S.W.	N.E.	Rain.	Rain.
7	45.	49.	49.5	30.07	N.W.	N.W.	Cloudy.	Fair.
8	49.	53.5	50.	30.	N.E.	S.W.	Rain.	Rain.
9	51.	55.	52.	29.81	S.E.	S.E.	Ditto.	Foggy.
10	43.	53.	45.5	29.90	N.W.	N.W.	Fair.	Fair.
11	37.5	47.	39.	30.	N.W.	N.	Cloudy.	Ditto.
12	36.	43.	37.	30.16	N.W.	N.W.	Fair.	Ditto.
13	38.	49.	48.	29.82	S.W.	S.	Cloudy.	Ditto.
14	39.	46.	40.	29.87	N.W.	N.W.	Fair.	Ditto.
15	36.	46.	36.	30.18	N.W.	N.W.	Ditto.	Ditto.
16	32.	48.	47.	30.	N.W.	N.E.	Cloudy.	Rain.
17	50.	54.	40.	29.68	W.	N.W.	Fair.	Fair.
18	33.	41.	33.5	30.10	N.W.	N.W.	Ditto.	Ditto.
19	34.	43.	34.	30.21	W.	N.E.	Ditto.	Cloudy.
20	35.	36.	43.5	29.57	N.E.	N.E.	Snow.	Rain.
21	38.	42.	40.	29.50	N.W.	N.E.	Mist.	Ditto.
22	37.5	43.5	39.	29.55	N.W.	N.W.	Fair.	Fair.
23	33.	46.	46.	29.90	W.	S.W.	Ditto.	Cloudy.
24	47.	53.	36.	29.85	N.W.	N.W.	Ditto.	Fair.
25	27.	28.	21.	30.26	N.W.	N.W.	Ditto.	Ditto.
26	17.	30.	25.	30.60	N.W.	N.W.	Ditto.	Ditto.
27	25.	41.5	38.	30.44	W	S.W.	Cloudy.	Rain.
28	41.	50.	44.	30.03	S.W.	E.	Ditto.	Cloudy.
29	45.	44.	45.	30.	E.	N.E.	Rain.	Rain.
30	47.5	59.	50.	29.92	N.E.	S.W.	Ditto.	Fair.

Quantity of rain, 5.45 inches.
Mean temperature, 43.°5.
Mean altitude of the barometer, 30.05.

METEOROLOGICAL JOURNAL,

FOR DECEMBER, 1811.

Day of	Thermometer 7 A. M.	3 P. M.	10 P.M.	Barometer. 3 P. M.	Wind. 7 A. M	10 P. M	Weather. Day.	Night.
1	37.°	44.°	37.°	30.10	W.	N.W.	Cloudy.	Fair.
2	33.	43.	35.	30.18	N.W.	N.W.	Fair.	Ditto.
3	33.	48.	41.	30.03	W.	W.	Ditto.	Ditto.
4	41.	52.5	40.	29.95	N.W.	N.W.	Ditto.	Ditto.
5	39.	51.	53.5	29.76	S W	S.	Rain.	Rain.
6	52.	46.	39.	29.41	S.	N.W.	Cloudy.	Fair.
7	40.	46.	44.	29.54	S.W.	S.W.	Fair.	Rain.
8	40.	41.	34.	29.25	W.	W.	Rain.	Fair.
9	30.	34.	28.	29.72	W.	N.W.	Fair.	Ditto.
10	30.	37.5	31.	30.	W.	W.	Ditto.	Ditto.
11	33.	44.	37.	29.80	W.	W.	Ditto.	Ditto.
12	32.	41.5	35.	29.90	W.	W.	Ditto.	Ditto.
13	33.	39.	31.	30.12	W.	W.	Ditto.	Cloudy.
14	26.	27.	18.	30.30	N.E.	N.E.	Cloudy.	Fair.
15	15.	18.	26.	30.30	N.	W.	Ditto.	Cloudy.
16	35.	39.	30.5	30.07	W.	N.W.	Rain.	Fair.
17	29.	39.	37.5	60.31	N.	N.E.	Cloudy.	Cloudy.
18	42.	47.	48.	29.70	N.E.	S.	Rain.	Rain.
19	45.	27.	15.	28.96	S.W.	N.W.	Snow.	Fair.
20	11.	15.	12.	29.77	N.W.	N.W.	Fair.	Ditto.
21	13.	27.	34.	30.26	N.W.	S.	Cloudy.	Snow.
22	32.	39.	28.	29.90	W.	N.W.	Fair.	Fair.
23	28.	29.	38.	29.70	S.	S.	Cloudy.	Snow.
24	20.	9.	4.	29.23	N.E.	N.	Snow.	Cloudy.
25	10.	22.	17.	29.50	N.W.	N.W.	Fair.	Fair.
26	18.	31.	26.	29.66	W.	W.	Ditto.	Ditto.
27	26.	30.	25.	29.77	W.	N.W.	Ditto.	Ditto.
28	23.	24.	18.	29.65	N.	N.W.	Snow.	Cloudy.
29	15.	23.	20.	29.58	N.W.	N.W.	Cloudy.	Ditto.
30	24.	32.	23.	29.50	N.W.	N.W.	Fair.	Fair.
31	20.	31.	24.	29.67	W.	W.	Ditto.	Cloudy.

Quantity of rain, 4.60 inches.

Quantity of snow, by estimation, 12 inches.

Mean temperature, 29.°

Mean altitude of the barometer, 29.63.

The thermometer employed in the foregoing observations was made by W. and S. Jones, and the barometer by Adams, London.

THE

NEW ENGLAND JOURNAL

OF

MEDICINE AND SURGERY.

Vol. I.] APRIL, 1812. [No. II.

SOME REMARKS

ON THE

MORBID EFFECTS OF DENTITION;

MORE PARTICULARLY WITH REFERENCE TO THE DISEASES OF TEETHING CHILDREN IN SUMMER AND AUTUMN.

BY JAMES JACKSON, M. D.

(Continued from page 25.)

Of the causes of Cholera Infantum.

XXXVIII. In treating of the causes of the disease last described, we will endeavour to confine ourselves to what is derived from observation and experiment, without engaging in any hypothetical speculations. The causes may be divided into the remote and the proximate. Among the remote causes we shall not regard the distinction of the predisponent and exciting causes, seeing that the same may sometimes be classed under the one and sometimes under the other head.

XXXIX. The principal remote causes may be comprehended under five heads, viz. dentition, the season, improper food, restraint from exercise in the open air, and an impure atmosphere. On each of these we will briefly comment.

XL. *Dentition.* It is only in teething children that this disease occurs. It is often produced at the time when one or more

of the teeth are protruding through the gums, and at this time an inflammation is frequently observed in the portion of the gums immediately over such teeth. At this time likewise the inflammation sometimes extends to the whole lining membrane of the mouth, as described in section XXX. If already existing, the disease is aggravated at the time when any teeth are protruding.

XLI. The disease is sometimes confounded with an affection not uncommon to children, previous to the age of dentition, and which frequently occurs even in the first month. In this affection the alvine discharges are frequent, and consist partly of fæcal matter and partly of mucus coloured with green bile, of curdled milk and a watery fluid. All these symptoms are referable to imperfect digestion in the patient, and may commonly be traced to some error of diet, or to general debility and indigestion, in the nurse. In some cases they have appeared to be owing to the child's taking too much food habitually, and not throwing off the superabundance, as most infants do. But this affection is readily distinguished from the disease under consideration. For first, there is generally a considerable mixture of fæculent matter in the discharges, although not of a healthy colour. And secondly, it is evident that sufficient food is digested to afford nourishment to the patient, for the growth and vigour increase almost as rapidly, as if this disorder did not exist. When the general health does suffer in these cases, it is commonly in consequence of the unnecessary exhibition of remedies to the child; when, if any remedies are required, they are required only for the nurse.

XLII. Although dentition must be acknowledged as one of the necessary causes of the cholera of infants, yet these subjects are not equally liable to the disease at all stages of that process. The first teeth which pierce the gums in most cases are the two middle incisors of the lower jaw. The passage of these teeth is much less frequently attended with either pain or constitutional irritation, than that of the other teeth. Accordingly this disease rarely occurs before the eighth or ninth month.

XLIII. Likewise this disease seldom commences in children, who are past eighteen months. At this age infants have still a

number of the temporary or milk teeth, remaining within the gums; on an average they have six or eight teeth in this situation, and the passage of these teeth is often attended with some disorder of the primæ viæ, and often with violent constitutional irritation. There seem to be two reasons why the cholera infantum does not more frequently affect children past eighteen months. One is, that children at this age are able to run about freely; and thus they acquire vigour by exercise, while they are not easily confined in an impure atmosphere. The other is that at this age, in subjects previously healthy, the stomach becomes more capable of digesting food of various kinds.

XLIV. *The season.* This disease occurs sometimes, though rarely, in April, May, and June; that is, in the spring season of our climate. But its frequent occurrence is in July, August, September, and October; that is, in summer and autumn. In winter the disease never commences; and, even in cases where it had existed with great severity, its violence abates in November.

XLV. It is then evident that there is some cause operating in the summer and autumnal seasons, favourable to the production of this disease. At this season in our climate, and in climates similar, serious acute diseases are more frequent, than in other seasons of the year; especially idiopathic fevers, and affections of the chylopoietic viscera. Whether there is one, or whether there are various causes, belonging to this season, to which its various diseases may be attributed, we do not undertake to consider. Nor shall we inquire in what manner the season operates in producing any of the causes of disease. This inquiry has engaged the attention of many distinguished men in all ages, and if it be not decided we do not flatter ourselves that we can throw any new light upon it. We therefore call *the season* a cause of this disease, intending that this term shall include whatever may be the noxious cause, or causes, that arise in that portion of the year, which has been defined.

XLVI. On this head we will only add that the disease under consideration, and indeed acute diseases generally, have in this place been more common when the summer has been warm and dry, than when cool and moist. Such, at least, have been

the results of the author's remarks, but he submits them with diffidence. The period, during which they have been made, has not been sufficientlylong to authorize confidence.

XLVII. *Improper food* is the next among the remote causes enumerated in section xxxviii. That food is improper, which the stomach will not digest, or not without difficulty. The best food is the nurse's milk to children who are affected, or who are liable to be affected with this disease. We therefore seldom find this disease in any of its severe forms among infants at the breast. A child, while at the breast, during the warm weather, will often digest even other food than that obtained from his nurse much better, than after he is weaned. These considerations might lead us to inquire under what conditions infants should be taken from the breast. But on this head enough has already been stated in sections xx. xxi. Material effects are produced by other errors in diet, beside that of depriving the child of the nurse's milk at an improper age or season. But this subject must be fully considered, when treating of the cure; to which time we refer it.

XLVIII. *Restraint from exercise in the open air.* Children, who are frequently and freely in motion in the open air, are comparatively very little subject to the cholera of infants. The disease is most common among those children of the rich, who are bred in the nursery, and who are seldom indulged in the use of the open air; and among the children of those poor, who live in single apartments above the ground floor, or who from any causes are unable to keep their infants much abroad.

XLIX. *An impure atmosphere.* This cause is very frequently combined with the last; but it is also found to be injurious, independent of that. What constitutes the impurity of atmosphere productive of this disease, we do not undertake to decide. We can only say that it is such as is found in cities, and even in villages, where the houses are very near to each other. In such situations the disease is much more prevalent than in the open country, and a removal from the former to the latter is very frequently attended with the most happy effects in children affected with cholera.

L. We come next to inquire what is the *proximate cause* of cholera infantum. This is to be learnt from a consideration of the whole history of the disease ; from the symptoms during life, and the appearances discovered in fatal cases after death. If all these were fully and correctly stated in the preceding remarks, a consideration of them will lead us to the proximate cause.

LI. In section xvii. the symptoms of the diarrhœa of teething children are traced to dyspepsia, or indigestion, and to an irritation of the chylopoietic viscera generally. This diarrhœa approaches in many of its charactsrs to the cholera, yet there are some very important differences between the two diseases, when exhibited in their most exquisite forms. The following symptoms belong to the latter, and not to the former disease, viz. pain or uneasiness after taking any thing into the stomach, the frequent rejection of the food shortly after it is swallowed, increased thirst, irregularity in the actions of the bowels, and the retention in them of fæcal matter. But above all, we notice in the cholera a prostration of strength, an emaciation, and a shrinking of the whole body, accompanied by febrile paroxysms.

LII. It appears then, that although in the cholera, as in the diarrhœa, there exist dyspepsia and irritation of the chylopoietic viscera ; that there probably exists also something more ; that there is discovered an irritability of stomach, and a severe constitutional affection, greater than are the ordinary attendants on dyspepsia, especially when not yet of long continuance. The dyspepsia, &c. in the diarrhœa imply only debility of the stomach in the performance of its digestive functions ; but in the cholera there appear effects greater than, and different from those, which commonly belong to dyspepsia from debility. What is the cause of these greater and peculiar effects, is learnt in the examination of the body after death. In this examination it appears that the mucous membrane of the stomach, and of that portion of the small intestines most immediately connected with the stomach, has been affected with inflammation.

LIII. It is then to this inflammation of the mucous membrane of the stomach and small intestines, that the peculiar phenomena of cholera infantum may be traced, in the same manner as those

of dysentery have been found to be owing to a similar affection of the large intestines. It is when this inflammation supervenes in the autumnal diarrhœa of infants that the disease assumes its serious and threatening aspect; and it is at this time that the popular remark is made, that now "the canker has seized the bowels."* This inflammation is no doubt much more extensive and more severe during life, than it is found to be after a slow and lingering death. In different cases it no doubt varies in extent and violence; whence it happens that the symptoms appear more or less fully, and that there are "eases intermediate" between this disease and the diarrhœa, as stated in section XXII.

LIV. A partial view of this subject might lead to the opinion, that the cholera does not differ from what we have called the diarrhœa of teething children, except in degree; that when the causes of the diarrhœa act with unusual force, or for a long time, they produce that disease in its more severe form, and that it is then called cholera. Such however we are persuaded is not the case. The cholera may be produced by the same remote causes, as those which produce the diarrhœa, only acting with greater force, or for a longer time. But the cholera does not appear to be merely an increase of the other disease. The evacuations in the diarrhœa may be frequent and copious for a considerable length of time, without producing that prostration and general irritation which ensue at once in cholera, even in cases where the discharges are not frequent nor copious; and those formidable effects will sometimes take place suddenly in cholera, when affecting children previously in full vigour. The cholera is not therefore a disease to be distinguished from diarrhœa as to its cause, only by greater debility in the parts affected. This conclusion is strengthened by comparing the effects of cholera with those of diarrhœa in young infants, as described in section XLI.

* The author is ready to acknowledge his own error in having often unjustly ridiculed this popular distinction. The real similarity of the affection of the bowels to that affection of the mouth, vulgarly called canker, and described in section XXX. is very obvious. In the small intestines it is not commonly, if ever, accompanied by ulcerations, like those in the mouth; but in the large intestines this sometimes occurs. See note to § XXXVI.

LV. The inflammation of the mucous membrane of the stomach &c. which exists in cholera is rather of the chronic than acute kind. It varies in force in different subjects, but is never, or very seldom extremely severe. When it is so, it produces the symptoms of cholera suddenly and in great severity; and for the most part, when not counteracted by medical treatment, it proves fatal in a short time. All this happens more readily if the inflammation be near the cardiac orifice of the stomach.

LVI. To the foregoing considerations it may be added, that the effects of inflammation of the mucous membrane of the stomach and small intestines, in subjects of all ages, are in the most important respects, similar to those displayed in cholera infantum. This last disease has certainly individual features, which distinguish it from other diseases of the same family. It has been the endeavour of the author to point out those peculiar features, but the task is a difficult one, and he is not altogether satisfied with his own success. The causes of this individuality are to be sought in the characteristics of the subjects of the disease; and those are referable to age and to the process of dentition in which those subjects are engaged. See section I.—V.

LVII. A few remarks shall be added with a view to the *ratio symptomatum*. The effects of inflammation vary according to its kind and degree, according to the structure of the part affected, and according to the organ affected. To discuss the subject in all these respects would lead us too far. It will suffice to state that the following are the legitimate effects of the inflammation in cholera infantum.

First. The sensibility and the irritability of the parts will be augmented.

Second. The parts will cease to perform duly their proper or peculiar functions; as for instance the stomach will not digest food, or not without difficulty.

Third. The parts will secrete fluids different in quantity and quality from those secreted in health.

Fourth. The organs affected will be in some measure incapacitated from contracting strongly and vigorously to propel their contents; while, in consequence of the increase in their

irritability and sensibility, they will frequently be excited to painful efforts for this purpose.

Fifth. Not only the organs immediately affected, but others, subsidiary to them, will have their secretions altered in quality, and for the most part increased in quantity.

Sixth. The constitution will be affected by sympathy; more powerfully, if the inflammation affects the stomach in any considerable degree; less, if it be confined to the bowels. Also the whole system will suffer, though not so immediately, from the want of nourishment.

A comparison of these remarks with the description of symptoms will perhaps afford a sufficient explanation of those symptoms.

(To be continued.)

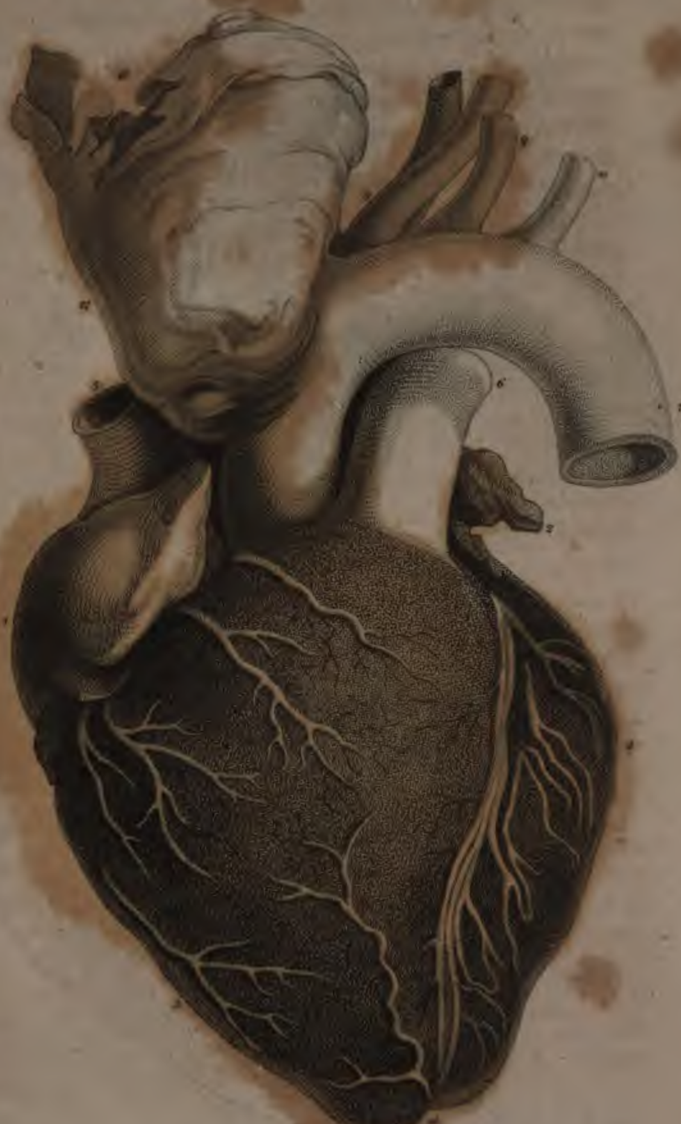
CASES

OF

ORGANIC DISEASES OF THE HEART AND LUNGS.

BY JOHN C. WARREN, M. D.

In the commencement of the year 1809, I had the honour of communicating to the Massachusetts Medical Society some cases of organic diseases of the heart, in which were mentioned the Clinical Lectures of Professor Corvisart, a few of which I had attended in the hospital of La Charité in the year 1802. Since the time of that communication M. Corvisart's lectures have reached us, and unfolded the history of these diseases in the most satisfactory manner. As a translation of this valuable work is promised the American public, I shall not pretend to give any account of it at present; but continue to contribute my labours to the general stock of information, by occasionally selecting and publishing a few of the numerous cases that are presenting themselves. Of the three cases, which I have at present selected, the first has been chosen because it affords an opportunity of comparing the symptoms produced by an aneurism



of the aorta with those of diseases of the heart already published; the second because it is rare and curious; the third because it will probably throw light on the cause of symptoms in these interesting diseases.

CASE I.

Aneurism of the origin of the Aorta.

Mr. ——, a gentleman of small stature, but uncommon muscular power, was affected in the autumn of 1808, with pains in the right shoulder, arm, and leg. His complaint being supposed to be rheumatism; he was bled and blistered. The pains often returned, and became so severe in the shoulder, in the spring of 1809, as to induce Dr. Eustis, a friend of his family, and Dr. Bates his physician, to make an examination of this part. When the breast was uncovered, Dr. Eustis observed with astonishment a small pulsating tumour on the right side of the thorax, between the second and third rib, at the distance of one or two inches from the sternum, Dr. Eustis pronounced to the friends of the patient, that his disease was of an incurable and fatal nature.

Soon after, I examined this gentleman with Dr. Warren, senior, and Dr. Bates. We found the tumour very slightly projecting from the surrounding surface, possessing a strong pulsation, and a little tenderness on pressure. It was about two inches in diameter. The internal jugular vein of that side had a considerable pulsation. The pulse in the right arm was not sensibly different from that of the left, and neither of them changed from the healthy state. The patient informed us that he was much troubled with dizziness and headach; that he had been formerly subject to enlargement of the hemorrhoidal veins with discharges of blood, which had not lately occurred, and that in other respects his health was unimpaired. We learnt from his friends that he had accustomed himself to very severe and dangerous equestrian exercises, in which he took pride, and was very expert, and that he had long discovered signs of weakness in the thorax, especially in the year 1788, when he suffered greatly from the pressure of a bayonet-belt on that part, during his exercises in a military company.

Although, at the period of our examination, he scarcely admitted the existence of symptoms which might indicate disease in an important organ, it was not long before the sufferings, connected with organic diseases in the heart, began to advance with slow, but formidable steps. After his complaints had made some progress, they were suddenly arrested on the application of a large blister, and allowed him an interval of ease of four or five months duration. In the month of March, 1810, after exposure to

cold and moisture, his symptoms were increased in a very sudden and alarming manner. His respiration became laborious and suffocating, his cough incessant, and pain in the breast more violent than at any former time. He started often from sleep with the dread of suffocation, and was compelled to sit upright in bed. One of the most distressing symptoms was a difficulty in swallowing, which greatly increased in this paroxysm of disease. His cough was violent, and attended with a copious expectoration of whitish mucus. This paroxysm was alleviated; but he never had an easy day, nor a quiet night, afterward. The disorder occurred in fits of two or three days duration. In the intermissions, he was comparatively comfortable, and able to attend to business. The symptoms scarcely changed afterward except in degree, and in the increased frequency of their recurrence.—The respiration became at last very laborious, and was attended with a loud noise. The cough more violent, expectoration greater, and tinged with blood. The right jugular vein was dilated enormously; while the carotid artery of that side apparently lost its pulsation. The pulse was weaker on the right than on the left side, and in the last paroxysm intermitted. This paroxysm occurred in August, 1811. It continued about four days, and terminated with the appearances of suffocation.

In the course of the disease, Dr. Bates frequently relieved the symptoms by blistering, by calomel with opium, and other medicines which promote expectoration. Dr. Warren employed bleeding and various narcotic substances, particularly stramonium and cicuta with temporary advantage.

DISSECTION.

On the day following the patient's death, I examined the body in presence of a number of medical gentlemen.

The countenance was slightly bloated and livid. The extremities were not œdematous. We observed that the third rib of the right side was pushed out, at least the space of an inch. The projection was greatest at about two inches distance from the sternum. The skin over it was livid, and appeared thin, as if ready to burst. When the cartilages of the ribs had been divided, and two or three ribs sawed, we found it difficult to raise the sternum, which was discovered to adhere to a substance in the thorax. The ribs were very carefully separated, but not without tearing open this substance, and exposing a cavity. This we discovered to be a great tumour from the right side and posterior part of the aorta, at the root of the arteria innominata. This tumour had a narrow base, so as to leave half the circumference of the aorta uninjured. It pressed forward on the second and third ribs, and the right edge of the sternum, which had become carious. There was a separate tumour on the back part of the arch of the aorta, extending from the arteria innominata to the left carotid artery,

of smaller size than the other. The latter involved the origin of the arteria innominata, which was placed on its superior and posterior portion. It extended to the spine, pressed on the trachea, and adhered to it at the bifurcation, and pressed also on the oesophagus. The upper and central part of the thorax was occupied by these two aneurisms, from the sternum to the spine. The cavities of both were filled with coagulated blood; yet not in such manner as evidently to interrupt the canal of the aorta, or of the great arteries of its curvature. The plate, which accompanies this case, represents about half the extent of the largest aneurismal tumour. Such a view as would have exhibited the tumour more completely, must have concealed its connection with the aorta. The heart was of a small size. The texture of the lungs was healthy, and not much filled with blood. The air vessels of the lungs were crowded with a very white coloured mucus. In the right cavity of the thorax we saw about ten ounces of water; and five or six ounces in the cavity of the pericardium. The abdominal organs were sound, and their cavity without water.

CASE II.

Opening in the mitral valve.

A healthy female, 21 years of age, who had been married 5 years and had two children, the last of which had been weaned a week, when she was taken ill; was suddenly attacked with an acute pain in the left foot, that continued a whole night, and subsided in the morning. On the afternoon of the following day she was affected with an acute pain in the left shoulder, darting thence through the clavicle to the heart. Her skin was hot, face flushed, and pulse hard. Dr. Bean, who was called to her, bled and blistered her without effect, but she was eventually relieved by the use of opium. The pain recurred at intervals afterward. About a week from the time of the first attack, she had a very severe chill, accompanied with extreme lividity of the face. These symptoms subsided in about half an hour, but recurred two or three times a day afterward, and frequently terminated in fainting. A numbness of the left side, which she had experienced at first in a slight degree, increased very much. Her respiration became extremely difficult, and required her chest to be raised high in bed. Her sleep was interrupted by frightful dreams, during which she started up and screamed that she was suffocating. The pulse at this time was very irregular and intermittent. The heart palpitated violently. About six days before death, the legs swelled, and the pain in the shoulder subsided. She expired on the twentieth day from the first attack, with symptoms of suffocation. The fatal paroxysm invaded her in the manner described above. Her respiration was laborious, pulse scarcely perceptible, lips livid, and eyes wild and staring.

DISSECTION.

The body was examined by Drs. Jackson and Bean. When the heart was opened, the mitral valve nearest the aorta was discovered to have an opening, through which one's finger might be passed. The edge of the opening was surrounded with a thick substance, which gave it the appearance of a fringe. The cavity of the thorax contained a large quantity of water. The appearance of the subject was unusually white, and generally œdematous.

CASE III.

Disease of the Lungs, the symptoms of which much resembled those of organic diseases of the Heart.

Susan Collier, aged 27, was attacked on the 28th of January, 1810, with profuse hœmorrhage from the lungs, and raised by coughing large quantities of florid blood. This attack was accompanied with severe pain in the left side of the chest, greatly increased upon forcibly inspiring. Her breathing was quick and laborious, and her pulse hard and frequent. She complained of pain and dizziness in the head, her face was florid, and her skin hot and dry.

Upon inquiry it appeared, that the patient had been troubled with cough for several days, and she mentioned of her own accord, that she had observed an unusual palpitation at her heart for some time. Six weeks had elapsed, according to her account, since the last appearance of the menstrual evacuation. She had been costive, and entirely lost her appetite. Sixteen ounces of blood were drawn from her arm, muriatic acid was directed, and a blistering plaster was the next day applied to her side.

During the month of March, the cough was very distressing through the night, but in the day time not very frequent. It was quick, almost spasmodic. She expectorated, largely, thick frothy mucus. The palpitation of the heart could now be observed through her clothes by the bystanders at a considerable distance. It appeared by regular paroxysms, almost invariably at 11 in the morning, and at 5 or 6 o'clock in the evening. In the night, when awaked by coughing or frightful dreams, which frequently happened, it was most violent, and attended with such difficulty of breathing as to force her to start up and remain with her body erect, until the paroxysm abated. She laid with her head raised very high by pillows, but said she breathed much more easily, when sitting in a chair. Pain in the side continued and was occasionally severe. She became subject to frequent profuse sweatings at night, and, in the morning and at noon, to chills followed by flushes of heat. Her pulse became more irregular, particularly in the paroxysms of dyspnœa and palpitation. It was generally frequent, but varied very much

in hardness and fullness, and sometimes intermitted. Venesection and blistering gave some relief as before.

In the two succeeding months her symptoms were highly aggravated. The cough became more violent and the attacks of palpitation more distressing, particularly in the night time. She laid in bed with her head so much elevated by pillows, as to be almost upright. When she sat in a chair she often rested her head upon her arms, supported by her knees. The palpitation of the heart was felt extending over a large part of the side, but perceived most distinctly at the epigastric region. It was accompanied with a constant sense of pain and distress in the whole course of the sternum, which she sometimes described as if a weight were laid over her heart, checking its motion. The carotids could be observed at a great distance pulsating very strongly. Her pulse became highly irregular, sometimes intermitting as often as once in 10 or 15 strokes. In the left arm it was usually slower and rather more contracted than in the right. Sometimes it was the bis feriens of authors. Large doses of hemlock and opium gave but little relief to the attacks of distress in the night, which were so severe as often to induce her to prefer sleeping in a chair to lying in a bed. Occasionally, but not often, hectic chills appeared in the morning. The perspirations in the night no longer continued profuse. She expectorated thick, whitish mucus, generally mixed with large quantities of a clear pellucid fluid. When difficult it was often relieved by squills. Her appetite was tolerably good, and her bowels were extremely costive, probably from the use of opium.

The violence of the paroxysms varied very much. One day she would feel comparatively easy and happy, as her breathing would be free and the palpitations slight. The next, her symptoms would appear with renewed violence, and induce a state of absolute despair. Two attacks were so severe as to require venesection. Vesication over the sternum was kept up as constantly as possible.

May 15th, her feet and ancles began to be swelled and soon became œdematous. This appearance, however, after the assiduous use of friction with flannel, subsided in about ten days. On the 28th, in the afternoon, she became delirious, wildly rolling her eyes, tossing her limbs, recognizing no one. She answered questions put to her, though confusedly, and complained of violent pain in her head. In the evening venesection was employed to give her relief, and while the blood was flowing from her arm, she became perfectly sensible. Her head continued dizzy, and she long complained of pain shooting through her temples. Blistering at the back of the neck and behind her ears finally removed these troublesome symptoms, and for a fortnight before her death she remained perfectly freefrom them.

On the 29th of June her pulse became extremely small and frequent. The cough and fruitless attempts to raise mucus from her throat, together

with short and laborious respiration, gave her exquisite distress. In the night the palpitation was unusually violent, and the next morning at ten she expired.*

DISSECTION.

The body was examined on the day after death. The countenance was quite livid. When the heart was opened, we were surprised at finding no appearance of disease in it, excepting a very moderate ossification of the coronary arteries; such as is often found in patients, who die without a symptom of affection of the heart. The aorta was small in proportion to the heart. The pericardium contained one or two ounces of serous fluid. The lungs were universally in a state of induration much resembling that of a scirrous breast. They yielded but little to pressure, and did not collapse in any degree when cut, nor their vessels, as usual, pour out blood. The cells contained a quantity of frothy mucus. No pus could be found. The pleura of the ribs was closely adherent to the lungs in every part, so that the thoracic cavity was completely filled by a resisting, solid body.

Each of the cases, related above, contains something worthy of particular remark.

In the case of aneurism of the aorta, we find many symptoms, such as accompany disease of the heart, and yet an absence of some of the most important and characteristic. Among the former, are the difficult respiration, cough with copious expectoration, difficulty of lying in a horizontal posture, starting from sleep, and paroxyms of suffering with intervals of ease; but we do not observe the violent palpitations, the irregular pulse, and the watery effusions which commonly attend diseases of the heart. How can we explain the abscence of these appearances? Probably, the symptoms of disease, in this case, ought to be attributed, rather to disturbance, in the respiratory apparatus, than in the organs of the circulation. The pressure of a great tumour on the lungs would necessarily impede the exercise of their healthy functions, while it excited them, and irritated their vessels to increased secretion of mucus. Hence we should have difficulty of breathing, cough, and copious expectoration. But the canal of the aorta remaining open, no interruption existed to the discharge of blood from the heart, therefore no palpitations,

* The notes of this case were principally taken by my late ingenious pupil, Mr. Henry Carnes.

no irregularity in the pulse, no impediment to the transmission of blood from the capillaries, and of course, no effusion from the exhalants. If this explanation be just, it will follow that this case is precisely the reverse of case third; for in the former, a disease in the organs of the circulation produced disturbance in the respiratory function, while in the latter, a disease of the organs of respiration deranged the function of circulation. It is scarcely necessary to remark that the difficulty in swallowing was caused by pressure on the esophagus; and the acute pain in the shoulder and arm, by pressure on the first dorsal nerve, going to the brachial plexus, or by pressure on the phrenic nerve.

The second case exhibits the terrible effects of a *sudden* change in the organization of the heart. It would be a deviation from the main object of this paper to inquire, whether the diseased orifice, in the mitral valve, was the effect of rupture from some unknown cause; or whether it was the consequence of inflammation and ulceration. The thickened and tuberculated appearance of the edge of the orifice affords grounds for the latter suspicion; yet no traces of inflammation or ulceration could be discovered in any other part of the organ. The observations of M. Corvisart give us reason to believe that a rupture in the valve might occur suddenly, without previous disease, from a cause, which the patient would not very readily disclose.

The case of diseased lungs appears unintelligible at first view; for we observe in it the symptoms of diseased heart, without a correspondent change in the structure of that organ. It must be confessed, that on the examination of the body of this patient, we were not a little disappointed and embarrassed; and our difficulties were not removed till lately, on meeting with a certain memoir of M. Portal, which has lead us to a new view of this case, and to consider it as confirming, rather than subverting, the doctrine of pathognomonic symptoms of diseases of the heart. This memoir treats of the action of the lungs on the aorta during respiration; and is accompanied with the remarks of M. Bordeu, by which he endeavors to show "that the connection of the left bronchia with the aorta, may produce modifications in the pulse, that may be called pectoral modifications, or pectoral pulse." It seemed probable and even nearly certain,

that if the pressure of the bronchia on the aorta influenced the circulation of the blood, in a healthy state of organs, that this influence must be greatly increased in some diseases of the lungs.

Before we inquire how such an influence could operate, we are naturally led to some investigation into the causes of the phenomena, attendant on diseases of the heart. These seem principally to depend on disturbance in the organs of respiration and circulation: but the symptoms of disease in the respiratory organs evidently arise from disorder in the circulation of the blood, at least in most cases, as may be shown presently. Our researches are therefore narrowed to an inquiry into the cause of disorder in the organs of the circulation. This cause seems to be a mechanical obstruction to the circulation of the blood, as it passes through the heart or great artery; for whether the disease be an induration of the auriculo-ventricular or aortal valves, or an aneurismal enlargement of the heart, there must generally be an obstruction to the passage of blood out of the heart; arising from disproportion between the quantity of blood to be transmitted, and the size of the passage to receive it. If the heart cannot discharge the whole, or at least the greater part of its blood, that portion which remains, must prolong the stimulus on the organ, or rather, repeat it too suddenly. The heart, thus imperfectly stimulated, will contract imperfectly, with a tremulous motion, constituting palpitation. This tremulous motion, propagated along the blood in the arterial system, produces irregularity in the pulse. M. Corvisart informs us that the left side of the heart is more frequently diseased than the right, especially with ossification. If the blood be obstructed in its passage through the left side of the heart, it must be so in the pulmonary veins, and of course in the whole vascular system of the lungs. There accumulated, it compresses the air cells, prevents the free admission of air, and excites difficult respiration, cough, and their concomitant symptoms. The copious discharge of mucus from the lungs, and in the latter stages of the disorder, discharges of blood, proceed from the exhalant vessels of the lungs, which receive an unusual quantity of fluids from the capillary vessels, because the latter cannot freely empty themselves into the veins. Continuing to pursue the circulat-

ing system backward, we observe accumulation of blood in the jugular veins and in the veins of the face and head, causing dizziness, intense headach, and purple colour of the lips and face; we sometimes also observe such accumulation in the liver. The whole venous system seems overcharged with blood, which is probably the cause of the permanent dark colour of the skin, observed in some violent cases. As the blood is collected in the venous system, it cannot readily be emptied by the general capillary system into the origins of the veins, will therefore be thrown upon the exhalant vessels in every part of the body, and thence its thinner or serous portion will be poured into the cellular membrane, into the cavities of the abdomen, thorax and pericardium. These explanations seem to flow very naturally from a little observation of the phenomena and morbid changes in organic diseases of the heart. They are however offered with diffidence as results, which have occasionally suggested themselves, and not as the consequences of any very profound research. They may also have been presented, at least in part, by those able hands into which the investigation of these diseases has fallen.

If it should be admitted that the symptoms of diseases of the heart arise from a mechanical obstruction to the circulation of the blood through that organ, there will be no difficulty in explaining the appearances in our case of diseased lungs. A mechanical cause on the outside of the heart, or aorta, may certainly obstruct the passage of blood as much as a cause existing within. The lungs transformed into a hard tumor, filling nearly the whole thoracic cavity might we suppose, make such pressure on the aorta near the spine, or perhaps on some part of the heart itself, as to interrupt the passage of the blood. From that interruption would follow the symptoms of organic disease in the train we have pointed out.

After examining the best writers on morbid anatomy I have not been able to discover a case of similar disease of the lungs, whose symptoms corresponded with those of this case. That, which approaches most nearly to to it, is to be found in Lieutaud, who quotes it from De Haen, and is headed, "The heart false-

ly accused." * "On examining the body of a certain little young woman who for many years encountered a violent palpitation of the heart, panting, anxiety about the præcordia and frequent cough, in spite of various remedies; the vital organs were found to be perfectly healthy, if you except a genuine but very slight adhesion of the lungs to the pleura. Moreover, three worms were discovered in the intestine ileum."

A CONCISE VIEW OF THE RESULTS OF DR. DAVY'S LATE ELECTRO-CHEMICAL RESEARCHES.

(Continued from p. 61.)

SILEX, ALUMINE, ZIRCONE, GLUCINE.

The results of the action of the galvano-electric matter on these earths, were much less satisfactory and conclusive than those resulting from the application of the same agent to the alkalies and alkaline earths. In no instance did Dr. Davy succeed in obtaining their bases independent of the substances with which they were mixed or combined, for the purpose of facilitating their decomposition. Yet "from the general tenour of these results and the comparison between the different series of experiments," observes this gentleman, "there seems very great reason to conclude that these, like the alkaline earths, are metallic oxides, for on no other supposition is it easy to explain the phænomena that have been detailed."

AMALGAM PROCURED FROM AMMONIA.

From the experiments of Mess. Pontin and Berzelius of Stockholm, and of Dr. Davy, ammonia is inferred though not

* *Cor falsò incusatum.* Obs. 611. Lib. 2. Lustrato cadavere cujusdam fœminæ juvenculæ, quæ multis abhinc annis, *vehementi cordis palpitatione, anhelitu, anxietate* præcordiorum, tussique frequenti, frustrà variis adhibitis præsidiis, conflictabatur; vitalia viscera sanitatem illibatam adeò referebant, ut nihil illibatius, si excipias genuinam, sed lævissimam, pulmonis adhæsionem ad plevram. Deprehendebantur insuper tres lumbrici in intestino ileo. *Clar. Haen.*

demonstrated to have a metallic basis, and the latter has denominated it ammonium. It is susceptible of combination with quicksilver, and of forming an amalgam, characterized by very singular and curious properties. "For the de-oxygenation of ammonia and the combination of its basis with mercury, the alkali must be in its nascent state, or at least in that condensed form in which it exists in ammoniacal salts and solutions." For the purpose of obtaining this amalgam, about 50 grains of mercury were placed in a cavity, formed in a piece of muriate of ammonia, and negatively electrified in the circuit of a large battery. "The globule in a few minutes had enlarged to five times its former dimensions, and had the appearance of an amalgam of zinc; and metallic crystallizations shot from it, as a centre, round the body of the salt. They had an arborescent appearance, often became coloured at their points of contact with the muriate, and when the connection was broken rapidly disappeared, emitting ammoniacal fumes and reproducing quicksilver.

The same effects were produced by placing mercury in carbonate of ammonia.

The amalgam from ammonia when formed at the temperature of 70° or 80°, is a soft solid of the consistence of butter; at the freezing point it becomes firmer, and a crystallized mass, in which small facets appear, but having no perfectly defined form. Its specific gravity is below 3. water being 1.

When thrown into water, hydrogen gas is disengaged, and the fluid becomes a weak solution of ammonia. Confined in a given portion of air, the air enlarges considerably in volume, and the quicksilver re-appears. Ammoniacal gas is produced, and oxygen gas absorbed. The amalgam thrown into muriatic acid gas, is instantly covered with a crust of muriate of ammonia, and a small quantity of hydrogen gas is disengaged.

In sulphuric acid it becomes coated with sulphate of ammonia and sulphur.

The basis of ammonia is capable of forming triple amalgama with quicksilver, and the new metals potassium, sodium, barium and calcium.

Dr. Davy made many attempts to procure ammonium in a separate state, but his experiments were unsuccessful, and the difficulties in effecting this object will be readily conceived when it is known that "the whole quantity of the basis of ammonia combined in sixty grains of quicksilver, does not exceed the $\frac{1}{200}$ part of a grain, and that to supply oxygen to this, scarcely $\frac{1}{1000}$ part of a grain of water would be required, which is a quantity hardly appreciable, and which merely breathing upon the amalgam would be almost sufficient to communicate."

"The more the properties of the amalgam from ammonia are considered, the more extraordinary do they appear. Mercury, by combination with about $\frac{1}{12000}$ part of its weight of new matter, is rendered a solid, yet has its specific gravity diminished from 13.5. to less than 3, and it retains all its metallic characters; its colour, lustre, opacity, and conducting powers remaining unimpaired. It is scarcely possible to conceive, that a substance which forms with mercury so perfect an amalgam, should not be metallic in its own nature."*

* Having thus detailed the mode of formation, and the physical and chemical properties of the amalgam from ammonia, Dr. Davy proceeds to offer some considerations of general theory, connected with the metallization of the alkalies and the earths. As the inferences in these observations are founded on certain assumed data, and are supported by a train of hypothetical reasoning, we have not considered them as coming within the plan of our paper, and have not consequently inserted them in the text. As, however, it has been supposed by many, that one of the objects of this celebrated chemist was to re-establish on a firmer basis the exploded theory of phlogiston, we have thought that a concise view of the ground of his opinion, and of the extent to which it has been carried, would not prove uninteresting to those of our readers, who have cultivated a taste for chemical science, and who have not had an opportunity of obtaining this information from the English journals of philosophy and chemistry.

On reviewing the properties of this amalgam Dr Davy proceeds to ask, "On what do the metallic properties of ammonium depend?

Are hydrogen and nitrogen both metals in the æriform state, at the usual temperatures of the atmosphere, bodies of the same character as zinc and quicksilver would be in the heat of ignition?

Or are these gases in their common form, oxides, which become metallized by deoxidation?

Or are they simple bodies, not metallic in their own nature, but capable of composing a metal in their de-oxygenated, and an alkali in their oxygenated state?"

EXPERIMENTS ON THE ACTION OF POTASSIUM ON AMMONIA, AND OBSERVATIONS ON THE NATURE OF THESE TWO BODIES.*

The researches detailed in this lecture were suggested by the Experiments of Gay, Lussac and Thenard, on the combinations of potassium and ammonia, and by the theory which they then advanced, but which has since been retracted, that the

* A phlogistic chemical theory might certainly be defended on the idea that the metals are compounds of certain unknown bases with the same matter as that existing in hydrogen; and the metallic oxides, alkalies and acids, compounds of the same bases with water. But in this theory more unknown principles would be assumed than in the generally received theory It would be less elegant and less distinct. In my first experiments on the distillation of the basis of potash, finding hydrogen generally produced, I was led to compare the phlogistic hypothesis with the new facts, and I found it fully adequate to the explanation. More delicate researches, however, afterwards proved, that in the cases where inflammahle gases appeared, water, or some body in which hydrogen is admitted to exist, was present. Nicholson's Phil. Jour. vol. 20. Supplement. p. 323.

"I mentioned in the Bakerian lecture for 1807,* that a modification of a phlogistic chemical theory might be defended on the idea, that the metals and inflammable solids, usually called simple, were compounds of the same matter as that existing in hydrogen, with peculiar unknown bases, and that the oxides, alkalies and acids, were compounds of the same bases with water; and that the phænomena presented by the metals might be explained on this hypothesis.

"The same mode of reasoning might be applied to the facts of the metallization of the earths and of ammonia, and perhaps with rather stronger evidences in its favour; but still it will be less distinct and simple, than the usually received theory of oxygenation which I have applied to them."

"Assuming the existence of hydrogen in the amalgam of ammonium, its presence in one metallic compound evidently leads to the suspicion of its combination in others. And in the electrical powers of the different species of matter, there are circumstances which extend the idea to combustible substances in general. Oxygen is the only body which can be supposed elementary, attracted by the positive surface in the electrical circuit; and all compound bodies the nature of which is known, that are attracted by this surface, contain a considerable proportion of oxygen. Hydrogen is the only matter attracted by the negative surface, which can be considered as acting the opposite part to oxygen; may not then the different inflammable bodies, supposed to be simple, contain this as a common element?"

* Bakerian Lecture for 1809. Nicholson's Jour. vol. xxiii. p. 242.

new metals from the alkalies are compounds of their bases with hydrogen.

When ammonia is brought into contact with about twice its weight of potassium at common temperatures, the metal loses its lustre and becomes white, and there is a slight diminution in the volume of the gas.

The white crust proves to be potash, and the ammonia is found to contain a small quantity of hydrogen. On heating the potassium in the gas, the colour of the crust is seen to change from white to a bright azure, and this gradually passes through shades of bright blue and green into dark olive, and by continuing the process, the whole may be converted into the dark olive coloured substance.

PROPERTIES OF THE COMPOUND.

1. It is crystallized and presents irregular facets, which are extremely dark, and in colour and lustre not unlike the protoxide of iron; it is opake when examined in large masses, but is semi-transparent in thin films and appears of a bright brown colour by transmitted light.

"The general facts of the combustion, and of the action of these new combustible substances on water, are certainly most easily explained in the hypothesis of Lavoisier; and the only good argument in favour of a common principle of inflammability, flow from some of the novel analogies in electro-chemical science."

And in a subsequent Lecture Dr. Davy remarks. "The facts observed in this Lecture afford no new arguments in favour of the idea, to which I referred in my last communication to the Society, that of hydrogen being a common principle in all inflammable bodies; and except in instances which are still under investigation, and concerning which no precise conclusions can as yet be drawn, the generalization of Lavoisier happily applies to the explanation of all the phenomena."

We have thus quoted we believe nearly all that has been said by Dr. Davy on this subject, and it will be observed, that his reasoning is founded on data which have not been demonstrated, and on analogies which require further investigation to be confirmed. The idea itself is simply suggested by the author, as flowing from some of his experiments, and is advanced with a degree of diffidence, which appears in the enunciation of all his speculative opinions, and which would lead us to believe that he is not strongly biassed in its favour.

2. It is fusible at a heat a little above that of boiling water, and if heated much higher, emits bubbles of gas.

3. It appears to be considerably heavier than water, for it sinks rapidly in oil of sassafras.

4. It is a non-conductor of electricity.

5. When it is melted in oxygen gas, it burns with great vividness, emitting bright sparks. Oxygen is absorbed, nitrogen is emitted, and potash, which from its great fusibility seems to contain water, is formed.

6. When brought into contact with water, it acts upon it with much energy, produces heat, and often inflammation, and evolves ammonia. When thrown upon water it disappears with a hissing noise, and globules from it often move in a state of ignition upon the surface of the water. It rapidly effervesces and deliquesces in the air, but can be preserved under naptha, in which, however, it softens slowly and seems partially to dissolve. When it is plunged under water, filling an inverted jar, by means of a proper tube, it disappears instantly with effervescence, and the non-absorbable elastic fluid liberated is found to be hydrogen gas. By far the greatest part of the ponderable matter of the ammonia that disappears in the experiment of its action on potassium, evidently exists in the dark fusible product. And I doubt not, says Dr. Davy, that the weight of the olive coloured substance and of the hydrogen disengaged precisely equals the weight of the potassium and ammonia consumed.

When this compound is exposed to a dull red heat, a quantity of elastic fluid is generated consisting of a small proportion of ammonia, and the rest of an inflammable substance.

When any moisture is present, the original quantity of ammonia is re-produced.

PROPERTIES OF THE RESIDUUM OF THE FUSIBLE SUBSTANCE AFTER EXPOSURE TO HEAT, EXAMINED UNDER NAPTHA.

1. Its colour is black and its lustre not much inferiour to that of plumbago.

2. It is opake even in the thinnest films.

3. It is very brittle and affords a deep grey powder.

4. It is a conductor of electricity.

5. It does not fuse at a low red heat, and when raised to this temperature, in contact with plate glass, it blackens the glass, and a greyish sublimate rises from it which likewise blackens the glass.

6. When exposed to the air at common temperature it usually takes fire immediately and burns with a deep red light.

7. When it is acted upon by water, it heats, effervesces most violently and evolves volatile alkali, leaving behind nothing but potash. When the process is conducted *under* water, a little inflammable gas is found to be generated.

8. It has no action on quicksilver.

9. It combines with sulphur and phosphorus by heat without any vividness of effect, and the compounds are highly inflammable, emit ammonia, and the one phosphuretted, the other sulphuretted hydrogen gas, by the action of water.

Dr. Davy then proceeds to observe that on the principles of the antiphlogistic theory this substance ought to be a compound of potassium, a little oxygen and nitrogen, or a combination of sub-oxide of potassium and nitrogen.

In his experiments, however, instituted for the purpose of ascertaining this point, a comparatively small quantity of nitrogen was evolved while the gas thus liberated strongly detonated with oxygen gas.

I had calculated, says he, upon procuring nitrogen as the only æriform product; I obtained an elastic fluid, which gave much more diminution by detonation with oxygen, than that produced by electricity. But in the action of water upon the residuum, there is an apparent generation of nitrogen.

How then can these extraordinary results be explained?

The decomposition and composition of nitrogen seem proved, allowing the correctness of the data; and one of its elements appears to be oxygen; but what is its other elementary matter?

Several queries are then proposed by him on the probable nature of this unknown base. In his subsequent researches however, he concludes that it is hydrogen, and that ammonia and water consist of the same elementary substances.

As the inquiry now stands, he continues, it is sufficiently demonstrative that the opinion, which I had ventured to form respecting the decomposition of ammonia, in this experiment, is correct; and that, M. M. Gay Lussac's and Thernard's idea of the decomposition of potassium and their theory of its being compounded of hydrogen and potash, are unfounded.

RESULTS OF DR. DAVY'S ANALYTICAL EXPERIMENTS ON SULPHUR, PHOSPHORUS, PLUMBAGO, CHARCOAL AND DIAMOND.

1. Sulphur. This substance in a perfectly dry state was submitted to the action of voltaic electricity, from a battery of 500 double plates of 6 inches diameter. The action was most intense, the heat strong, and the light extremely brilliant; elastic gas, which proved to be sulphuretted hydrogen, was formed in great quantities,* amounting in the course of two hours, to more than five times the volume of the sulphur employed.

"The existence of hydrogen in sulphur is fully proved, and we have no right to consider a substance, which can be produced from it in so large quantities, merely as an accidental ingredient."

Other experiments "concur in proving the existence of a principle in sulphuretted hydrogen, capable of destroying partially the inflammability of potassium and of producing upon it all the effects of oxygen."—"Now if we suppose sulphuretted hydrogen to be constituted by sulphur dissolved in its unaltered state in hydrogen, and allow the existence of oxygen in this gas, its existence must likewise be allowed in sulphur, for we have no right to assume, that sulphur in sulphuretted hydrogen is combined with more oxygen than in its common form."

"From the general tenour of these various facts, it will not be, I trust, unreasonable to assume, that sulphur in its common state, is a compound of small quantities of oxygen and hydrogen with a large quantity of a basis, that produces the acids of sulphur in combustion, and which, on account of its strong attrac-

* In the Bakerian lecture for 1808, Dr. Davy refers to the experiments of W. Clayfield, Esq. and of M. Berthollet, jun. which "almost demonstrated" the existence of hydrogen in sulphur, in its common form.

tion for other bodies, it will probably be very difficult to obtain in its pure form."

2. Phosphorus. This substance acted upon by the voltaic electricity of 500 plates gave out considerable quantities of phosphuretted hydrogen gas, and the phosphorus became of a deep brown red colour. The gas extricated was equal to four times the volume of the phosphorus employed.

From the results of experiments on the phosphuretted hydrogen and on phosphorus in contact with potassium, Dr. Davy concludes that phosphorus contains oxygen and hydrogen.

3. Plumbago. In this substance the carbonaceous element exists merely in combination with iron and in a form which may be regarded as approaching to that of a metal in its nature, being conducting in an high degree, opaque, and possessing considerable lustre.

4. Charcoal appears to contain a minute portion of hydrogen in combination. Possibly likewise, the alkalies and earths produced during its combustion, exist in it not fully saturated with oxygen; and, according to these ideas, it is a very compounded substance, though in the main it consists of the pure carbonaceous element.

5. Diamond. The experiments on the diamond render it extremely likely that it contains oxygen; but the quantity must be exceedingly minute, though probably sufficient to render the compound non-conducting; and if the carbonaceous element in charcoal and the diamond be considered as united to still less foreign matter in quantity than in plumbago, which contains about $\frac{1}{20}$ of iron, the results of their combustion, as examined independently of hygrometrical tests, will not perceptibly differ.

(To be continued.)

REMARKS

ON DISEASES RESEMBLING SYPHILIS;

WITH OBSERVATIONS ON THE ACTION OF THOSE CAUSES WHICH PRODUCE THEM.

BY WALTER CHANNING, M. D.

(Continued from p. 68.)

WHAT we have just now remarked does not apply to morbid poisons, we find them acting at one time within a certain sphere and contaminating no farther, at another on the contrary, we find the local application of the morbid virus diffusing the specific characters of disease over the whole system, but both the local and constitutional morbid action equally yielding to constitutional remedies, and the first in their first appearance, to appropriate local ones.

The excitement which follows the introduction of morbid poisons, in common with all other causes of disease, into the system, may be considered the process which is necessary to the restoration of healthy action, that process in short by which the morbid poison is attempted to be removed from the system, remedies not being employed. But certain remedies which go by the name of specifics being exhibited are also causes of their appropriate action, and this either by suspending the morbid action already set up in the system, and thus allowing healthy action to be restored;—or by completely destroying the morbid one, or concurring with the remaining healthy action, effect a cure. Suppose however for a moment, that no morbid poison has been applied to the part, or introduced into the system; but that certain symptoms should appear, certain local irritations and ulcerations which so nearly resemble the specific ones of a morbid poison, as to seem to authorise the exhibition or application of such remedies as in genuine cases of the supposed disease are very proper; the consequence must be a morbid excitement; a diseased action will be instituted in the system, and to

the cure of this the living powers will be called into requisition. The part which is the seat of the original supposed specific morbid action, not requiring a specific remedy, becomes the seat of accumulated irritation, the necessary consequence of which is an aggravation of all the symptoms. Whereas in the case of the local action of a morbid poison, although the constitution may and does suffer from the use of the specific, (I speak now of venereal poison and action) as every one must acknowledge who has either witnessed or experienced the effects in such or other cases, still the local diseased action requiring a specific remedy, is not irritated by it, but on the contrary is suspended and the part healed.

Now although it be admitted that the specific irritation of mercury, if there be such, may not interrupt the process of healing of a mere excoriation or abrasion in a sound part, still it can very easily be supposed to do this in those cases which are the consequences of an application of a secretion to such an excoriated part, which are altogether different from syphilitic ones, and of this character shall we show those resembling syphilis to be.

Although we have stated what the modus cperandi of a certain specific may probably be, we find it not universally to obtain, that is to the extent which might be at first supposed.—We find cases occurring in which the specific remedy however fairly exhibited, though attended with all its appropriate actions, does not by any means operate a cure, but on the contrary merely so far suspends the action of the morbid poison as to render its effects stationary. In other cases however in which all the attendant symptoms of genuine disease seem present, we find them either shewing not the smallest disposition to heal, or what has more generally happened in such cases, all the symptoms have been aggravated. That upon entirely relinquishing the use of the specific the diseased parts take on healthy action, and advance rapidly to a cure. In such cases accident may produce another symptom, strongly characteristic of the supposed disease, and the specific is on the ground of safety, resorted to. It shall now be found that the constitutional irritation consequent to such treatment, is so far from aggravating the healing parts,

the process shall go on uninterrupted, and in due time leave our patient well. Such a case I shall now state.

CASE II.

A gentleman applied to me in February, 1810, with three ulcerations on the Glans Penis. These wore all the usual appearances of the disease incident to these parts. The account given of their origin was as follows. He stated that he had had sexual intercourse during the preceding week with two women, in whom he had always had the greatest confidence. The immemediate consequence was such an abrasion or excoriation of the skin of the part as he had been always liable to. But that in addition to what usually happened to the præputium only, he now observed to have happened to the Glans, at that part called the Corona. Some swelling took place; inflammation, and a slight discharge now followed, but not more than he had been long subject to. He had used some cooling lotion, kept pretty quiet, and lived low; the soreness and other symptoms now gradually subsided, and he supposed himself well.

He soon however began to feel more than usual sensations in the part; itching gradually amounting to pain came on, and led him to make an examination of the part; and he now discovered a small circumscribed ulcer, with white unhealthy elevated edges, and a secretion from the surface, the base was hard.— In addition to this he stated that in the preceding autumn he had been the subject of venereal chancre, in a mild degree, which most readily yielded to the usual local and constitutional treatment adopted in such cases; that during the disease he had taken a fatiguing journey, but nothing at all unpleasant occurred, and he had continued perfectly well to the present time, a period of four months.

Upon examination I found the part with respect to the ulcerations as he had stated it. There were three ulcers contiguous, situated upon the Corona Glandis extending to the part at which the prepuce is attached. From the history and appearances, there was no doubt on my mind as to the nature of the sores and the course to be pursued. Mercury in form of ointment was ordered to be rubbed upon the thighs, and caustics

were immediately applied to the ulcers; notwithstanding however the constitutional affection induced by the mercury, and the various dressings applied, the sores did not at all yield. Business now made it necessary for my patient to leave town. I gave him specific directions with respect to the course to be pursued. He was to avoid, as much as possible, all causes which tended to increase inflammation; and if at the end of another week the parts retained the same appearances, to suspend altogether the use of mercury, at which time I would see him. At this time I saw him, and found that on the journey the sores had increased, and to keep them under he had applied caustic. This added to the necessary excitement attending a long journey, performed in a stage coach, had brought on some considerable sloughing of the parts and great uneasiness. This had in some degree subsided, but the sores were much enlarged. I now began to think of this case differently, to believe the original excoriation and consequent ulceration was the effect of accident alone, and that if any infectious matter whatever, (I do not call it morbid) was applied, it was one which existed in the person or persons with whom he had had connection, not as the secretion of an action depending on a morbid poison; but one in the production of which most probably the constitution was not at all concerned, and that the original symptoms in my patient had been aggravated by the mecurial course, and that the ulceration was now kept up in consequence of that, connected with the necessary excitement of the journey. All mercury was immediately laid aside. Mild dressings applied, and a tonic treatment adopted. Alteration for the better soon took place; in a few days the middle and largest ulcer of the three was healed, and the others looked remarkably well. In the mean time a beverage of nitric acid was occasionally taken, but without any regularity.

I find my notes state that in April my patient is well, except a very small ulcer which is nearly healed. To expedite the cure of this, some medical friend advised the caustic. This was accordingly applied, and the consequence was a bubo; this continued to enlarge and was extremely painful; leeches, blisters, &c. were applied to it, but it still continued in the same state. My patient became extremely anxious, and feared that what he

always supposed syphilis was still lurking about him, and the ulcer still remained. He begged for safety to again be allowed the use of mercury; and to render him as easy as possible I consented. The constitution became very soon affected, and the inflammation and pain in the groin abating. At this time he consented to relinquish its use; the sore was not impeded in its cure but soon was perfectly healed, although I observed a small ulceration commencing again on the glans. This however did not increase, but yielded in a very short time, and my patient has remained well since.

On thé above case, it may be remarked, that from the time of commencing the mercurial frictions to that of leaving them off, in which time the system had been fairly under the mecurial action, the ulcers had never assumed a healthy appearance. Various local applications had been made, but without any benefit. The sores in short were worse at the time of leaving this course off than at any former period. As soon, however, as it was laid aside, and a tonic one adopted, when in fact, the system was enabled to rise from the prostration to which it was partially sunk, and was still farther sinking, and the simplest applications made, we find them assuming a healthy appearance, and rapidly healing. As to the swelling which was undoubtedly the consequence of the irritation of the caustic and the consequent treatment, it has no other bearing on the case than as it shews that the remaining ulceration on the glans was not impeded in its healing by the mercury; and the last ulceration which appeared might be considered the consequence of the additional action of the mercurial stimulus, or probably merely accidental.

There are perhaps few subjects more interesting than that of what is considered independent local diseased action. It is the occurrence of almost every day, the consequence of causes but little known, and still less sought for, and with all, assuming the diagnostic marks of a vast number of diseases. We use the word *local* in compliance with custom, but have little doubt, that many diseases of this description have their origin in the constitution itself, and for which there are appropriate remedies in nature. Their mildness is no argument against investigation,

as we shall be more and more convinced as we proceed. It has been found that these diseases, appearing in the form of ulcers for instance, do secrete at times, a matter which being applied to similar parts to those in which they originated, in a sound person, shall produce a disease, which shall not only affect the part to which it is applied, but shall also produce striking constitutional symptoms. Bubo, sore throat, and spots on the skin have all been found to succeed the application of such matter to the penis. Notwithstanding however these marked symptoms of genuine lues, they have all subsided without the least use of mercury; and have been found to be aggravated when they have been treated as syphilitic. These constitutional affections have not merely followed the application of the morbid cause in a single subject, but have been communicated with all their symptoms to others, and from the same cause have reappeared in the same person. It would seem to follow that the various parts of the body, or the several systems of which it is composed, have each of them particular capacities to receive impressions, and peculiar laws to govern their several actions in disease as well as in health. Morbid poisons, properly so called, when applied to these parts or systems are so far governed by the laws of the parts, and those also which they themselves as causes possess, as to exhibit peculiar phenomena, certain symptoms proper to each. Other causes besides those which have received the title of morbid as exclusively theirs, when applied to these parts or systems, are in a very striking manner under the same influence with the morbid ones. This is the source of all the embarrassment in distinguishing one from the other. They appear with so many striking similarities, advance for a time with steps so equal that *a priori* it would seem impossible to distinguish them. Syphilis has appeared in the form of sore throat, spots, or bubo, at once, without our being able to detect chancre. In other cases and far more commonly it has observed a different order. All its symptoms however have yielded to a mercurial course. The diseases resembling syphilis have appeared in the same manner; but have been, as it respects their constitutional symptoms, always violently aggravated by mercury, and its local primary ones very seldom benefitted

by it. Hunter tells us, page 570 of his work on the venereal, that he has seen mercury given in a supposed venereal ulcer of the tonsils, produce a mortification of those glands, and the patient has been nearly destroyed.—And the effects of mercury on the sloughing Phagedena of the glans penis have been horrible indeed.

In tracing the distinguishing marks of these two diseases, much may be gained by adverting to their origin. Lues venerea had its origin at a time, and in a manner, which has particularly engaged the authors who have treated on it. To these we beg leave to refer our readers. It is sufficient for us, that it has been traced back to a period of time, which is now generally admitted as that at which it commenced. It was then undoubtedly a *new* disease ; for the most accurate observers of disease who lived a longer or shorter period before it appeared, had never seen, and consequently have not described it. Its ravages, till a specific was discovered, were almost unparalleled, and such as could never have escaped notice. Celsus, one of the most acute observers, and perhaps one of the best describers who ever lived, is altogether silent about it. He however was not inattentive to the diseases of the parts commonly affected by it, for we find him naming and describing eight species of ulcer, which, however they may resemble what now appears as the genuine disease or its counterfeits, were neither attended by the consequences of lues, nor required its specific for their cure, they yielding to other remedies.

The time then at which those diseases appeared which have been confounded with the venereal, cannot be determined. In all probability they have appeared in all ages of the world, the parts in which they occur ever having been susceptible of diseased action in common with other parts of the body, and that accident was the cause of the application of that morbid poison which has produced syphilis, to the organs of generation of the person or persons from whom it has been continued to our times. We have used the vague word accident, for it is not our business to account for the production of the poison.

The evidence of their being distinct diseases, which is derived from their cure, is also very powerful. The specific

action of preparatives of a mineral substance (vivum argentum) notwithstanding all that has been said to the contrary, being absolutely necessary for the one, while the others readily yield to a very different treatment, and in many cases have been found violently, almost fatally, aggravated by its use.—We have read some where, that venereal sores sometimes heal spontaneously. The poison having undergone such a change by the constitution as to be deprived of its specific qualities, and distinctive characters. The last expression in the sentence may be true ; but the first part of it we feel much embarrassment in allowing. If chancre be the *local* action of a morbid poison, it would seem that the *constitution* could have but little influence in its cure, that being a *constitutional* action which requires the powers of the constitution to remove it. The direct tendency of a morbid poison is to alter the actions of a part. This is proved by the altered secretions, or new ones produced. The very circumstance of this process having been commenced, implies that that portion of the constitution, if I may be allowed the expression, upon which the poison has acted, has not altered the nature of the poison ; for the part secretes a matter similar to that which first excited the secretion. And we should almost be inclined to doubt if a venereal ulcer, viz. chancre, was ever healed by the powerful action of even a caustic, unless at its very first appearance, much less by the constitution alone, and that those which have been thus cured, however strikingly they resembled real chancre, have been merely cases of "pseudo-syphilis."

Although we have strongly opposed the continued use of mercury in those cases which are manifestly aggravated by it, and in those which do not bear the characteristic of chancre to be pointed out in the following pages, it may be well in those cases which strikingly resemble syphilis, to prescribe it in the first instance, attending at the same time most carefully to its effects. In cases where there are no very suspicious circumstances, we would recommend, with Mr. Abernethy, such a delay as will enable us to decide from the disease itself, what its nature and results may be. And it may not be improper here to add, that in cases decidedly venereal, where chancre and bubo have ap-

peared, in which, for instance, the bubo may have burst, and in which mercury has been profusely exhibited, and attended with all its specific effects on the constitution, if we do not find either the ulcers of the penis or groin shewing that disposition to heal which such a course of mercury should have effected, we may conclude that the present disease is the consequence of the mercury alone. And there are numerous cases on record, and our own observation has furnished us with others, which shew that on leaving off the mercury the sores have assumed a healthy appearance and readily healed.

We shall now proceed to describe chancre, or that ulcer which is produced by the application of the venereal poison to several parts of those organs which may be considered its proper seats, and make some remarks on its treatment, after having done this we mean to give such an account of the characters of those diseases which resemble chancre with their treatment, and reserve the remarks we mean to make on the constitutional diseases subsequent to each of them for another opportunity.

We shall quote in the first place, from Mr. Hunter's work, the description of chancre. This author has given them with such precision, that if the disease can ever be distinguished from others, we are of opinion it may be done by attending to his account of the appearances. According to him, chancre begins first with an itching in the part. If it is the glans that is inflamed, generally a small pimple appears full of matter, without much hardness or seeming inflammation, and with very little tumefaction, the glans not being so readily tumefied from inflammation as many parts are, especially the prepuce; but if the disease appears first upon the frenum, and more especially the prepuce, an inflammation more considerable than the former soon follows, or at least the effects of inflammation are more extensive and visible. The itching is gradually changed to pain; the surface of the prepuce in some cases excoriates, and afterwards ulcerates; in others a small pimple or abscess appears on the glans which forms an ulcer. A thickening of the part comes on, which at first, and while of the true venereal kind, is very circumscribed, not diffusing itself gradually and imperceptibly into the surrounding parts, but terminating rather abruptly.

Its base is hard, and the edges very commonly prominent. When it begins on the frenum or near it that part is very commonly wholly destroyed ; or a hole is often ulcerated through it, which proves very inconvenient in the cure, and in general it had better in such cases be divided at first. "Venereal ulcers commonly have one character, which, however, is not *entirely* peculiar to them, for *many* sores that have no disposition to heal (which is the case with a chancre) have so far the same character. A chancre has commonly a thickened base ; and although in some the common inflammation spreads much further, yet the specific is confined to this base." "The distance of time between its application, and its effects upon the part, is uncertain; but upon the whole, it is rather longer in appearing than the gonorrhæa ; this depends in some measure on the nature of the parts affected. If it be the frenum, or the termination of the prepuce into the glans, that is affected the disease will in general appear earlier; these parts being more easily affected than either the glans, common skin of the penis or scrotum." "I have known cases where the chancres have appeared twenty four hours after the application of the matter; and others where it has been seven weeks." "Where the disease is allowed to go on, so as to partake of the inflammation peculiar to the habit, it becomes in many instances more diffused, and is often carried so far as to produce disagreeable symptoms, as phymosis, and sometimes paraphymosis greatly retarding the cure; but still there is a hardness peculiar to this poison surrounding the sores, especially those upon the prepuce."

"There are three ways in which chancres are produced; first by the poison being inserted into a wound; secondly, by being applied to a non-secreting surface ; and thirdly, by being applied to a common sore. To which ever of these three different surfaces it is applied, the pus produces its specific inflammation and ulceration, attended with a secretion of pus. The matter produced in consequence of those different modes of application, is of the same nature with the matter applied, because the irritations are the same in both."

Dr. Joseph Adams, in his commentary on this chapter of Mr. Hunter, observes, "Now when venereal virus first produces its

irritation on a non-secreting surface, the consequence, as in other irritations, is ulceration. But this ulceration will not prove a cure, as it does in other cases of irritation, because when the venereal action is once set up the constitution has no power of changing it. Hence the attempt at healing being given up, the *hard base* is formed as in "those sores which have no disposition to heal." "But the venereal ulcer though it has no disposition to heal, cannot be stationary like a common sore, because the irritation for the same action still continues; hence this callous edge will be absorbed in the same manner as the edge of a chronic ulcer is absorbed, as soon as the parts are stimulated by what are called digestive remedies. The consequence of two such actions in the chancre must be a perpetual formation of this thickened edge and base, and also a perpetual ulceration of it, so that as long as the sore retains its true character, ulceration will only make slow progress, being perpetually retarded by this thickened edge and base." Such then, according to Mr. Hunter and his commentator, are some of the most striking characters of the venereal chancre, both with regard to its commencement and progress, and with such a history in his hands, Dr. Adams thinks no man can err. The treatment of such an ulcer, according to Hunter, should be both local and constitutional. The first consists in the use of such substances as have the power of destroying the life of the part to which they applied, and so suspending the action of, or destroying the morbid poison, altogether; and in simple dressings afterwards applied to absorb the matter secreted by the sore. Constitutional treatment consists in the external application, or internal exhibition of such articles as may, by exciting peculiar actions in the system, suspend and destroy the local one. Some have strongly recommended the latter only, and advised the application of the most simple articles to the sore. But with such authorities as Mr. Hunter and Dr. Swediaur, I should always *attempt* the destruction of the ulcer in the first instance, by which I mean, if I were called very early in the complaint; and this for many reasons: First—The subject of the disease may from some constitutional peculiarity not be susceptible of the mercurial action but in a very slight degree, by no means sufficient to connect or

render stationary the poison. It may, secondly, take a long time before it be effected in another; and thirdly, some situations of the system may preclude any but the most gentle use of mercury. Chancres under such circumstances, if left to themselves, only grow worse; and Hunter has left it as his opinion that the quantity of mercury necessary to cure a chancre is in an exact proportion to its size, and its consequent power of contamination.

After having applied caustics, we find him recommending the frequent change of the dressings, that the quantity of the matter secreted, and thus constantly in contact with the absorbing system, may be as small as possible. In this way the general system has more chances of escaping contamination, and the demand for the use of the curative means much lessened. It has been urged in favour of the constitutional treatment of chancre, without any local remedies, that the state of the sore will be an evidence of the destruction of the poison, and we can more decidedly pronounce concerning the safety of our patient. But if chancre be a local ulceration, whose continuance and whose increase depends only on the matter which itself produces, it follows beyond a doubt, that the suspension and destruction of that action by which that matter is secreted, is cure. And when local means are only used to act with constitutional ones, when their united effect is produced, viz. the cure of the ulcer, chancre, or whatever it be called, we are authorized to assure our patient that he is well.

(To be continued.)

REMARKS ON THE PETECHIAL, OR SPOTTED FEVER.

COMMUNICATED IN A LETTER FROM A GENTLEMAN IN THE DISTRICT OF MAINE, TO THE EDITORS.

HAVING formerly written to you on the subject of the spotted fever, so called; I take the liberty again to trouble you; as we have just had two cases of it, which have proved fatal; and a third is at issue. The last will of course be soon decided; but more may follow.

In the first, no advice was called for till it was too late; though Dr. —— obviated some terrible symptoms from purges, given by the family, and brought the patient into an apparently promising state. But the patient died comatose. The most remarkable symptoms here were convulsive catchings in the limbs, with a hurried state of mind, and blood from the nose.

In the second case, the patient lived a week, and preserved strength enough to the last to rise from her bed. Here the prominent symptoms were, shifting pains and swellings, pain in the side and chest, with affections on *one* side.

In the third, the affections have been in the head, and on *one* side, with a varying pulse, soreness of throat, chills, and spasms in the muscles.—These have all been young females.

In these cases I have mentioned only the marked or peculiar symptoms.—But every case has had more, or fewer of the symptoms, enumerated in the Society's treatise on this subject.

I write to know whether you have any thing new on these subjects; for I am sorry to tell you, that we have not found all that has been prescribed in the above treatise, sufficiently efficacious.

Before I proceed, I must acknowledge the deep debt, which the public is under to the committee concerned in that work; which is drawn up with *great fidelity and ability*, and refers to some very important observations by others.—I still am of opinion, that the greater number of readers would have been pleased, had the theoretical part been placed at the end, by way of ap-

pendix; but it is in itself a most important addition, and I am glad to see it any where.

After repeated study of the symptoms and treatment, compared with the theory there detailed, the following observations occur to me.

1. If the disease be often *erysipelatous* in the head, there seems not sufficient care to obviate this most alarming part of the complaint. 2. If the *circulation* is deranged, and the red particles withdrawn from one portion of the serum to be accumulated elsewhere; the measures taken to obviate this may be successful; but they are hardly according to rules in every point of view. 3. The *rheumatic* affections seem not the object of any direct remedy; and yet the relief of a symptom so extensive in the seats of it, cannot but have much influence upon the disease.

1. You know that I often refer to Kirkland. I find him a very obscure writer; but full of practical hints mixed with theories deserving of notice, and the author of much successful practice. He treats at large of erysipelas in general, and in particular; and I would specifically notice his treatment of it in the *head*. He makes local applications; not so much of blisters, because creating inflammation, before they produce a discharge; but puts on a neutralized ointment, as he calls it; or, where there is great inflammation, a neutralized *emollient* cataplasm. He, with many, thinks that oil does *not* stop up the pores; and uses it accordingly. After reading him and others, I am much inclined to believe that the elder (sambucus) has more virtues than those find, who judge of it by general principles, and not by its specific operations. Turner and Heister speak of it for erysipelas; and Kirkland has seen spirits of wine (which he holds to be a powerful sedative) with ointment of elder, in a few hours cure an erysipelas in the face, from a blast of air. Kirkland uses Glauber's salt at times with vinegar of lead, in a poultice. The communication between the blood-vessels within and without the cranium makes Kirkland trust much to these local applications; but where the case admits, he bleeds and gives *saline* purges; thinking that the latter, in addition to their anti-flogistic powers, render the "whole state of the vessels" more per-

vious than any thing else. He also, where bleeding and antiphlogistic measures are proper, uses cold to the head; also cream (or milk) with vinegar of lead; and lastly, the *ceratum ex aquâ frigidâ* of Galen. The latter is made of wax, melted with the best oil, which when cooled, is to be beaten up with as much cold water, as it will imbibe, when gradually applied.—I think elder may be taken inwardly, if purging, or rather an open body be wanted; mixing it with soluble tartar, or Rochelle salts. These two neutral salts reach the bile, which Glauber salts do not; though Kirkland uses the Glauber salts; and it may also be mixed with such other articles, as shall be judged proper.—Outwardly, Kirkland says, that a *small quantity of neutral salts will suffice;* and that inflammation and a stoppage of discharge will be the consequence of putting more of it to the acetite of lead, than is proper.

2. As to the circulation, I know that some measures are taken to regulate it: but has any one used fox-glove and opium, which have been given for rheumatic fever?—Chalybeates have much power in regulating the distribution of the red particles of the blood; as well as in increasing their quantity. There are various constitutions, where chalybeates throw the blood into the smaller extremities: but they may add too many red particles in the interior of the body for safety, in the present complaint.

3. For rheumatic affections, I have mentioned digitalis and opium. I have to speak of guiacum for the same purpose, especially as it is diaphoretic, and often aperient. When too aperient, opium may be added.—I could say new things about rheumatism, but this is not the time for it.

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CASES OF APOPLEXY WITH DISSECTIONS.

BY JOHN C. WARREN. M. D.

(Concluded from page 41.)

It gives me great satisfaction to be able to support, in some measure, the opinions founded on the cases, in the former part of this paper, by such authority, as that of the author of the following letter.

LETTER FROM JOSHUA FISHER, M. D. VICE-PRESIDENT OF THE MASSACHUSETTS MEDICAL SOCIETY.

Beverly, March 6, 1812.

Dear Sir,

In the first number of the New England Journal, I have read with pleasure your account of the appearances, observed on the dissection of two persons who had died of apoplexy: they seem to confirm the hypothesis of the sympathy, between the stomach and the brain, in some cases at least, of that disease. The same idea was impressed on my mind by the following case, which occurred to me when a young practitioner.

In the autumn of 1774, I was sent for, about sun-set, to visit a poor man who was attacked with a fit of apoplexy; not being at home another physician was applied to: on my return home, being informed that the physician who had visited him had attempted in vain to bleed him; had pronounced his case desperate, and had left him; I did'not think it necessary to see him. After the lapse of more than three days, hearing that the man was still alive, I called on him; found him perfectly insensible: incapable of voluntary motion; his breathing slow and sterlorous. I was informed that such had been his situation since the attack, and that in the mean time nothing had passed into his stomach; that on the day on which he was seized, he had procured a beef-steak for his dinner, of which, as I knew that to him it must have been a luxury, he had probably eaten voraciously; and that it was probable also, that after dinner, he had indulged himself in drinking ardent spirits to excess. Under these circumstances the source of his disease was sought for in the stomach. As he lay on his back, with his mouth open, I conveyed into his throat a small quantity of water, which

appeared to pass gradually into the stomach: I then dissolved ten or twelve grains of Tart. Emet. (Tart. Antimon.) in some water, and introduced it as fast, as it would pass down his throat. In less than an hour he began to puke. What he threw up consisted, principally, of large pieces of beef, the fat and lean parts of which were obviously distinguishable: nor did the meat appear to have undergone any considerable change, by having lain nearly three days and an half in the man's stomach, excepting that the pieces were enlarged. After a strong effort to puke, the patient appeared to be strangled; a finger was introduced into his throat, and a long piece of steak was extracted, so large that it could not pass without assistance.

The whole quantity of meat, thrown up, was nearly equal to that of a common meal for a man. I did not suppose that the emetic had thoroughly evacuated the stomach; but such was the effect of it, that, immediately after it had done operating the man spoke, and with some assistance could move himself With the aid of cathartics, &c. in a short time he recovered completely.

With sentiments of esteem,

Yours,

JOS. FISHER.

We infer from the preceding facts and observations that there are good reasons to be found in anatomy, physiology, and pathology for believing, that the stomach is capable of "materially affecting the head." A disturbance in the functions of the stomach may therefore, by means of sympathy, cause an excitement in the vessels of the brain, and an accumulation of blood; hence may proceed an effusion of serum, or the rupture of a vessel and effusion of blood. Whether such a sympathy can operate to weaken the cerebral vessels, or whether its effect be to cause a diseased excitement, we do not pretend to determine.

As an objection to this doctrine, the author we have been examining, adduces the condition of the brain, in organic diseases of the stomach. Patients, who labour under a scirrosity of this organ, are observed to suffer the most distressing and violent symptoms, during a considerable time, without disturbance of any of the functions of the brain. The external senses lose nothing of their acuteness; the power of motion is slowly diminished, and the intellect is undisturbed to the last moment. This objection has considerable weight at first view; but when examined, its importance vanishes. The character of symptoms in chronic diseases differs totally from that of acute or sudden de-

rangements. The examples are so numerous, as not to require citing, of remarkable disease in the brain itself, for some time unattended with decided symptoms. Tubercles and abscesses, forming slowly in the lungs, frequently become very considerable, before producing, either a local, or general irritation. The heart, in old men, is often the seat of an ossification, which is not attended with interruption of the circulation. While, on the other hand, the same derangements, *suddenly* occurring, would be followed with remarkable effects. There is no analogy therefore between the consequences of a blow, a concussion or an effusion of blood in the brain, and the symptoms of organic disease of the stomach.

Mr. Bell considers apoplexy as a disease of increased vascular action; he thinks it is produced by a "pure arterial impulse without any sensible cause." Without professing to combat this doctrine at present, it may be asked, if apoplexy depend on a pure arterial impulse, why are not the phrenitic, or the maniacal patient, or the drunkard attacked with apoplexy? In these cases, it must be admitted that the vessels of the brain are ordinarily suffering a greater excitement, a stronger arterial impulse, than in the aged and languid patients, who are so often the subjects of apoplexy. There are undoubtedly certain cases of rupture in the vessels of the brain, without preceding disease; as examples of this nature may be mentioned the apoplexy from a fit of passion, that of parturient women and others from sudden and violent causes. But we should be a little inclined to doubt whether apoplexy ever proceed from a "pure arterial impulse, without any sensible cause;" or whether apoplexy be, in any instance, a primary disease of the brain.* To pursue this subject would

* Since the publication of the first part of this paper we have received a work, published in England, within the present year (1812) by Dr. Cheyne, author of treatises on certain diseases of children. This seems to contain a great number of valuable facts; for we find in it twenty-three cases of apoplexy, many of which are accompanied with dissections. The attention of the author has been principally directed, as usual, to the brain; and the appearance of the stomach has not commonly been observed. In two instances however,, the inner coat of the stomach is mentioned. In case 14th, it is stated, "that the internal coat of the stomach was dotted with small red points, apparently depending on increased vascularity rather than ecchy-

lead to a very wide and interesting field of speculation ; but as it is desirable to avoid all theoretical disquisitions, I shall quit this part of the subject, and also take leave of Mr. Bell. Before doing this, however, I must apologise for the freedom of my re-

mosis ;" and in case 11th, "that the inner surface (of the stomach) presented itself remarkably inflamed and in a curious form. The surface was studded with innumerable little stars, uniformly of a rich lake colour, which by the magnifying glass seemed to be the terminations of blood vessels in minute branches with a slight extravasation of blood on every side of them : this form they preserved universally. At one part near the hylorus, the colour was of a deeper shade approaching to purple. About two-thirds of the stomach were affected in this way : the part least affected was the upper end of the great curvature. We found part of the duodenum, which we had removed from the body along with the stomach also inflamed in the same manner." The appearances in this case agree with those observed in our cases ; and probably many other instances of the same appearance might have been found, on examining the stomach in all the other patients.

Dr. Cheyne has apparently imbibed the opinion that primary increase of vascular action in the cerebral vessels, is the cause of apoplexy ; but he is disposed to place this action in the *minute* vessels of the brain. We have witnessed a case, which would have been inserted in this paper, had its limits admitted, where the hœmorrhage was distinctly traced to an opening in one of the large veins on the surface of the brain. The suddenness with which the effusion commonly occurs, also seems to forbid our believing it to proceed from small vessels.

The author is a great advocate for blood letting, and a decided enemy of emetics. He admits the latter to be employed only when the apoplexy is *threatened*, and after a full meal ; and then, a "*weak infusion of chamomile*, or of *carduus*, as recommended by Heberden, or even *tepid water* will answer every purpose." We have not observed any novel argument, adduced in favour of the one practice, or in opposition to the other.

The opinions of Dr. Cheyne may be collected from the following extract from the conclusion of his work.

After remarking that the state of the circulation in diseases of the head is a subject of great difficulty, he proceeds, "The following outline is proposed, not as a theory, but as the most consistent view of the subject, which I have been able to form.

"There is good reason for believing, 1. That there is an affection of the brain itself, *primarily*.

2. That this affection produces an excitement of the arteries of the brain.

3. That this again leads to *absorption of the brain*, interrupted circulation, venous turgescence and serous effusion.

marks on that ingenious writer. The more popular the author, and the more important subjects he treats, the more necessary is it that he be submitted to a rigid examination, provided it be conducted with impartiality.

The works of writers on pathological anatomy, and the experience of most physicians, afford a sufficient number of instances of apoplexy, occuring after a copious meal. Let it be remarked also, that the disease has usually appeared, not at the moment of a violent exertion, but *while the patient has been seated quietly at table*, or *in the hours of slumber*; while the movements in the sanguiferous system are less forcible than at other times. When we observe these frequent occurrences, and consider the general facts that have been stated above, it seems that those, who have been desirous of rejecting the use of emetics from the treatment of this disorder, have been too much influenced by the spirit of system. The indications of nature conduct to this remedy distinctly, in a considerable number of instances: for a spontaneous vomiting is not an uncommon attendant of the invasion of an apoplexy. When therefore, we find a patient, affected with this disease, soon after taking a large quantity of food, and when ever we find him inclined to vomit, an emetic should be administered. It has been objected that the exertions in vomiting prevent the return of blood from the brain, and thus increase the causes of rupture in the blood vessels. This objection is well founded, but not of sufficient magnitude to counterbalance the advantages from evacuating the stomach; for no objection can be of importance enough to prevent our removing the cause of the disease; and we can hardly conceive that any plan of cure can be adequate, that does not comprehend the removal of that cause, which still exists and must still operate. This difficulty seems to be somewhat lessened by the fact, stated by writers on this sub-

4. That sometimes the excitement of the brain is partial; the action of vessels of particular parts is excessive, and in consequence there is rupture and extravasation; or perhaps the rupture is owing to weakness of a particular part of the brain, the general action being uniform.

5. That there is an accidental rupture of an artery within the skull, which probably does not proceed from a primary affection of the brain, but from shocks or blows which the patient may have sustained during a prevailing activity of the vascular system of the head."

ject, that hœmorrhage from the lungs is not aggravated, but even sometimes restrained by the operation of an emetic. Now this organ is, no doubt, more violently agitated and compressed by the operation of an emetic than the brain. It is well known also, that certain cases of uterine hœmorrhagy are cured, and that abortions are sometimes arrested by the effects of this remedy.

The use of emetics does not, so far as we can discover, interfere with the employment of blood-letting; and in subjects of a sanguine temperament ought to be preceded by the latter remedy. It cannot but surprise that the advocates of each have thought it necessary to condemn the other; that Dr. Fothergill should endeavor to alarm us with formidable objections to bleeding, and Mr. Portal represent the effect of emetics as fatal. The safe way is between these extremes, and we can pursue it with confidence when we have such a guide as SYDENHAM.—"Mittatur sanguis è brachio ad xij. quamprimum; ac postea ex venis jugularibus ad ℥ viij, deinde Vomitorium ex ℥ i ß vel ℥ ij Infus. Croc. Metal. propinetur statim."

Note.—A medical gentleman in this town has lately received a letter from Dr. Adams, of London, the celebrated author of the Treatise on Morbid Poisons, from which he has handed me the following extract

"All the papers in the New England Journal of Medicine are valuable; but that on apoplexy appears to me particularly to require notice, because, if I am right, it involves a question, which should be attended to in every dissection. Was the appearance in the stomach the effect of inflammation or of a beginning digestion? There are two or three citcumstances in both cases, which would favour this opinion. First, both the patients died immediately after a full meal when the secretion of the gastric juice was likely to be considerable. Next, in both, immediate, universal death took place, for we find the blood remained dark coloured and fluid. Whether the body stiffened or not, we are uninformed. In the second case there was surely cause enough for death in the head. The stomach not only looked red in its inner surface, but near the pylorus, the redness was greater and the parts were tender. To what can we impute this, but a beginning digestion. Had the gentlemen present pressed the sides of the red part of the stomach, I very much suspect they would have seen blood issue from the, corroded, or divided ends of the smaller blood vessels. The subject is highly important as connected with almost every dissection, and particularly with some questions concerning death by poison."

The remarks in this extract merit great attention, and shall be the subject of future enquiries.

ACCOUNT OF THE

OPERATIONS OF LITHOTOMY AND ANEURISM.

COMMUNICATED IN A LETTER TO THE EDITORS, BY A CORRESPONDENT.

Mr. Astley Cooper has of late years made great use of the knife in the operation of lithotomy.

The knives are of different sizes to suit the adult and young subject. To use this knife,—After having taken the preliminary steps of the common operation, an incision is to be made in perinæo with an ordinary scalpel, so as to lay bare the groove of the staff at the membraneous part of the urethra; the curved knife is now to be introduced with its beak in the groove of the staff, and its concave edge towards the staff; it is to be passed along the groove until the blade of the instrument is fairly within the bladder, its cutting edge is then to be turned outwards, so as to bring the convex part or back of the blade to the groove of the staff; and being also turned a little downwards, an incision is to be made through the prostrate gland and neck of the bladder, in that direction, by withdrawing the instrument from the bladder; and the same time carrying its edge in the direction the cut is to be made.

The staff must now be withdrawn, and the fore-finger of the right hand introduced through the wound to ascertain the size and situation of the stone, and the width of the incision, which last must be dilated by again introducing the knife, should it not be of sufficient size to allow of the passage of the stone through it. In this part of the operation the surgeon is to make use of his fore-finger as a director, and make this second incision in the direction of the first.—The use of the gorget has been lately defended by Mr. Trye.

In France, Dubois, perhaps the most dexterous surgeon living, uses and recommends a double-edged scalpel. He performs the operation with a rapidity that astonishes every one.

Aneurism is a disorder of the arteries, which is constituted by such a morbid action in the structure of their coats, as that they yield to the impulse of the circulating blood. This, however, takes place very gradually; and that species of inflammation, existing at the same time in the surrounding parts, which produces adhesion, a sack is formed, which receives and contains the blood thrown in it, and which, without the adhesive process, already mentioned, having occurred, would escape into the cells of the cellular membrane.

The disease of aneurism may occur, perhaps, in the whole arterial system.

Although the bony passage, through which the internal carotid passes to the brain, may and does check the farther progress of the disease in that artery, still a disease in the arteries of the brain, very nearly resembling aneurism, does occur; an instance of which I recollect meeting with in the basilar artery.

In the Transactions of the Medico-Chirurgical Society, two cases are related of aneurism of the carotid artery. Mr. Astley Cooper took up the artery in both cases. One was completely successful, the other had advanced so far, and was of such size as to compress the pharynx, to such a degree, as to prevent deglutition, and thus to cause death. The tumour, however, which had produced the most alarming symptoms, previous to the operation, decreased after the operation, but soon after rapidly increased, so as to produce the death of the patient.

Mr. Cooper, with his accustomed intrepidity, has, I think in five cases of femoral aneurism, taken up the external iliac artery. The operation, in one of the last cases, was fatal from the bursting of an internal aneurism.

For taking up the artery, in cases of aneurism, Mr. Cooper uses an instrument, called the aneurismal needle. A tolerably correct notion of the shape of this instrument may be obtained by supposing the common-eyed probe of the pocket case bent in such a manner, as that the curve may be about an inch from the eyed end of the instrument, and a handle adapted to the other end. The instrument differs from the common probe, in being flat through its whole length. Its eye admits a double ligature, and the vessel is very easily taken up on it and secured.

TWO CASES OF NECROSIS.

COMMUNICATED TO THE EDITORS BY DR. JOHN R. MARTIN, OF BANGOR, IN THE DISTRICT OF MAINE.

CASE I.

In March, 1810, I. W. aged 24, with blue eyes, and light hair and complexion, applied to me in a case of Necrosis of the superior part of the humerus. He gave me the following account.

About *twelve years* ago, he had a severe and tedious fever: and *soon after his recovery*, had an acute pain in the arm, which seemed to lie deep in the bone. He in vain applied poultices, &c. &c.; the pain continuing till matter found a vent. His medical attendants treated the case variously: one sweated him; another starved and salivated him; while others used various injections; until one, more frank than the rest, told him that his disease was not within the reach of our profession; and that nature would either kill, or cure him, in seven years.

I described to him his disease and the method of cure. He left me doubting; and I did not hear from him till July 4; when he sent for me to operate.

I made a single semi-circular incision (beginning about an inch from the head of the bone); dissecting the integuments and flesh back, so as to admit the trephine on the surrounding new bone. I found no necessity of wholly removing any of the integuments in the operation. The incision was about four inches in length, and ranged with a set of healed and fistulous ulcers: the whole arm seeming to have a tendency to ulceration. I extracted five inches of sequestra [or remnant of old bone], which was loose and moveable *every way*.

There was no opening found through the surrounding new bone, larger than a crow-quill; but by taking out a piece of the new bone, of the size of a half crown piece (by means of Hey's saw and a chisel), I was enabled to saw the sequestra into two parts; and to extract it.—The *arm* was increased in size. The *integuments* were so universally diseased, as to present either the appearance of a fistulous ulcer, or of a cicatrix; and in many places, their substance was connected in one common mass with the *periosteum*. The *periosteum* was much thickened, and adhered strongly to the new bone.

The new bone was firm; and the patient said the arm had always been enough so for the ordinary uses of life, but had felt weaker than formerly about the commencement of the disease. When I cut through the new

bone, it was about the sixth of an inch in thickness. The *inner side*, (that is, the inner parietes of the incasement) had a coating which was in general smooth, but in some places granulated; and which in some parts was thick, but at others only formed a covering.

The *sequestra* was absorbed in some places through its whole substance. Where it remained, it was hard and dry; in some parts, being left in the form of a honeycomb; and in others, as smooth as if the periosteum had just been cleansed from it. The *absorption* and *non-absorption* of the different portions of the sequestra, seemed to correspond to the quantity of granulations on the inner parietes of the surrounding new bone.—The absorption from *each end of the sequestra* was so great, that I could only judge of the extent of the original sequestra, by the enlargement of the integuments of the arm; which extended to near six inches and a half in length.

The progress of the cure was uniform; being free from pain and foul discharge; and giving no more trouble than the dressing of a simple wound. It was near three months before the cure was perfect: since which, the young man has been hearty, and has the perfect use of his arm.

CASE II.

The patient, I. Bailey, was 13 years of age. His father having been present at the preceding operation, desired my opinion concerning him. In consequence, I visited him; and found him just able to crawl about; having Necrosis along the greater part of the tibia; from a blow on the shin *about a year* before.

He had occasional pain; a small and quick pulse; no appetite; and night sweats. His whole leg seemed a mass of corruption; being full of ulcerous sinuses, leading to the affected bone. The discharge was profuse and foul; and some of the ulcers completely extended to the lower end of the tibia. The leg was very much *enlarged;* and a depending position produced pain.

I deferred my decision on the case that day: hesitating between amputation and the extraction of the sequestra. On examining my books, I found little to confirm me in my hope of saving the limb. Reasoning, however, on the data which nature has given us in the cases, where she has thrown off the whole bone; and finding that the patient's constitution had not only hitherto been his sole support, but that he had still, apparently strength enough to go through an operation; while on the other hand he had a strong aversion to an amputation; I resolved to attempt the extraction.

I made an incision on the inside of the leg, extending it each way, as appeared necessary for extracting the diseased bone.

I found the *periosteum* much thickened and spongy; and in some parts almost incorporated with the integuments, (probably from previous inflam-

mation.) I dissected it back, and found the *new bone* rough; and in many places perforated by vessels leading to the inner parietes of the incasement. The perforations were of a size capable of admitting a bristle freely.—I then employed the trephine to obtain a passage through the new bone; which I explored in this way, till I had removed the whole of the diseased bone within.

The *dead bone*, at its upper part, was not entirely separate from the living. At the *sides* of the tibia, there was a considerable deposition of new bone, and some absorption from the old; but more along its *middle line*.—The *sequestra* was wedged in very tight; being as yet on the whole not much absorbed. At the lower extremity, the old, and part of the new bone, were so soft and spongy, that I cut into them with ease with my scalpel.

I dissected the soft bony matter from the cartilage of the lower end of the tibia so extensively, as to leave but very little bone remaining for the support of the leg; the new deposition being destroyed by matter, before it had acquired solidity.

While dissecting here, a sudden start of the patient made me cut into the *cavity of the joint*: and I found its internal appearance not only indicating no injury, but bearing the signs of *perfect health*.

From the whole aspect, however, of the leg, I feared lest I might not save it. I was even apprehensive for the patient's life; as he was much exhausted, the operation having lasted a full hour. After dressing the wound as a simple one, and in the mildest manner, I gave the patient an opiate, and put him to bed. In the course of two hours, he complained of chills and headach; and vomiting began, which continued during four hours more. The next evening he was more composed, though some of the symptoms were still in some degree alarming. The day following, however, he was quite tranquil. He was confined to the bed but a few days; though to the house between fifteen and twenty. He soon regained his appetite, and his general health mended fast. He used crutches for nine months, but rather from choice than necessity; for he could bear his weight on the foot in three months after the operation, without the least uneasiness. When I took away his favourite crutches, he soon found a free use of his leg.

He has now a limb that is perfectly sound, and as strong as the other; and the great vacancy left in the new bone is constantly growing less. Although his leg looks like the leg of a man placed upon the foot of a boy; and his *joint* is not quite so supple as that on the other side; his leg is a good one compared with one of wood.

Nothing short of such perfect success, could have relieved my anxiety.

J. R. M.

REMARKS ON THE ABOVE CASES, BY A DISTINGUISHED GENTLEMAN IN THE DISTRICT OF MAINE.

OPERATIONS, like the above, have not been frequent; and Boyer says little in their favour. When resolved upon, he recommends the complete removal of all soft parts, lying in the way of the operator; and after cutting circular holes in the new bone (with the trepan), he directs the parts of the new bone, lying between the holes, to be forced out with a mallet and chisel; which resembles one of the processes in common carpentry.—Perhaps, instead of these instruments, a circular saw may be used, moved by a crank from above; the saw forming complete revolutions. An incision may then be made with this saw *into* the bone cross-ways, at each end of the portion to be removed; two longitudinal incisions being to follow, parallel to one another and at right angles to the two first; so that the portion of bone to be removed will easily be withdrawn, without unnecessary disturbance to the softer parts. Circular saws of different diameters may be adapted in succession to the crank.—But when the bone is both hollow and lies near the surface, the bone may be sawed *through* at a single place at right angles; and the cut ends of the fragments being moved aside from each other, the sequestra may be drawn first out of one fragment, and then out of the other. This accomplished, the ends of the fragments may be replaced; and every thing healed as soon and as simply as possible. The pincers used, may be formed out of a flat bent piece of iron.

All this is said on the supposition, that the time has arrived for operating.—But *two previous points* are to be settled.

First, is there no cure to be had, which shall render surgical operations needless?—Mr. Bryan Crowther says that there is, and that Mr. Abernethy suggested it before himself; and that the cure is the same which he himself applies to white swellings; namely, blisters and his savine cerate.* This cure, it is

* Mr. Crowther's last receipt for his cerate is as follows. Take two pounds of fresh savine, which bruise; one pound of yellow wax, and four pounds of hog's lard: and having melted the wax and lard, mix in and

true, is not very rapid in white swellings; but in tedious diseases we must not reject slow cures, where others do not present themselves.

The *second* point previous to an operation is, to know *when* to operate.—In one of the above cases, had the operation been made a little earlier, the separation of the sequestra might have been difficult, and even impossible.—We want, therefore, some directing signs of the *maturity of the case;* on which points, Boyer is to be consulted among others.

The subject of *Necrosis* being interesting, and not as yet generally well understood, a little farther attention may be bestowed upon this inquiry.

Some important and original observations will be found in the following letter from Mr. James Macartney to Mr. Bryan Crowther; which appears to have been written about the year 1808; and which Mr. Crowther has published in the second edition of his work on *white swellings.*

Dear Sir,

The observations I spoke of having made upon *Necrosis*, related to the *changes of structure* which attend the progress of that complaint; and which, as far as I am informed, have not been accurately described by any writer upon the subject.

It happened a few years ago, that a *number of specimens of Necrosis* came into my hands; and some of them at very early periods of the affection. After having injected these with coloured fluid, I was enabled to trace the proceedings of the disease from its commencement.

I found that the first and most important circumstance is, the change which takes place *in the organization of the periosteum.* This membrane

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boil the bruised savine, and then strain. In his recipe published in 1797, Mr. Crowther had only half the above quantity of savine leaves. He further says, "The *ceratum sabinæ* of Apothecary's Hall is admirably made: "They bruise the fresh savine with half the quantity of lard, which is "submitted to the force of an iron press; and the whole is added to the "remainder of the lard, which is boiled, until the herb begins to crisp. "The ointment is then strained off; and the proportion of wax ordered, "being previously melted, is added to the composition."

acquires the highest degree of vascularity; becomes considerably thickened, soft, and spongy, and loosely adheres to the bone. The *cellular substance* also (which is immediately connected with the periosteum), suffered a similar alteration. It puts on the appearance of being inflamed, and its vessels enlarge; lymph is shed into its interstices, and it becomes *consolidated with the periosteum.* These changes are preparatory to the absorption of the old bone, and the secretion of the new osseous matter, (and even previous to the *death* of the bone which is to be removed. In one instance, I found the periosteum vascular and pulpy, when the only affection was a small abscess in the *medulla;* the bone still retaining its connection with the neighbouring parts, as it readily received injection). The *newly* organized periosteum (which, for the sake of distinction, one might call the *vascular sheath* or INVESTMENT), separates entirely from the bone. After this, it begins to remove the bone by absorption: and, during the time that this process is carrying on, *the surface of the vascular investment which is applied to the bone,* becomes covered with little eminences exactly similar to the *granulations* of a common ulcer.

In proportion as the old bone is removed, *new osseous* matter is dispersed *in the substance of the granulations,* whilst they continue to grow upon the *old* bone: until the whole or a part [of the old bone] is completely absorbed, according to the circumstances of the case.

What remains of the *investment* (after the absorption of the old bone, and the formation of the osseous tube which is to replace it), degenerates, loses its vascularity, and appears like a lacerated membrane. I never had an opportunity of examining a limb a sufficient time after the *natural* termination of the disease, to ascertain whether the investment be at last *totally* absorbed; but in some instances I have seen very little remaining.

During the progress of the disease, the thickened *cellular substance* which surrounded the *original* periosteum, becomes gradually thinner: its vessels diminish, and it adheres strictly to the new formed bone: to which it *ultimately* serves as a *periosteum.*

The most striking peculiarity in the history of Necrosis, you will then perceive to be the conversion of the periosteum into an *organ,* possessing active powers of *absorbing and secreting bone.**

The structure of *granulations* seems to be best calculated for performing these offices, since we find it employed for the same purposes on other occasions. Thus it is well known, that the *granulations* which are interposed between the two ends of a bone in cases of a compound fracture, become ossified. And I have observed that the detachment of carious bones in external ulcers, is effected by the granulations of the *sore* working their

* Query. Is not the apparent conversion of *cellular membrane into periosteum,* to be mentioned in this recapitulation?

way from the *edges*; absorbing indifferently the sound and dead bone, until the separation of the latter be complete.

I am, dear Sir,

Yours, &c.

JAMES MACARTNEY.

P. S. The anatomical preparations which authenticate the above observations, are preserved in the collection of St. Bartholomew's Hospital.

Mr. Crowther defends the above opinions of Mr. Macartney from the various objections to it, which may be drawn from the writings of other authors; as Mr. Bell, Mr. Russell of Edinburgh, who has an express treatise on Necrosis, and Messrs. J. B. F. Léveillé, Scarpa, and Brun; but for the detail of his defence, his work on white swellings is to be consulted.

We shall only observe, that Mr. Crowther agrees with Mr. Macartney, that the periosteum is the chief agent in the processes which accompany or which follow upon Necrosis; and that the absorption goes on by means of granulations. He asserts consequently, that pus is not, as Mr. Russell conceives, a solvent used on this occasion; affirming that the absorption goes on where the close contact of the bones prevents the presence of pus; and that it also stops, where the sequestra is incessantly exposed to pus, at the bottom of an ulcer. Mr. Crowther might have referred to the important inquiry set on foot by Mr. John Hunter, and continued by his brother-in-law, Mr. Everard Home, as to the existence of *solvent powers in pure pus*; a point which those gentlemen determine in the *negative*; (though sometimes, when pus is mixed and impure, it seems to possess such powers).—Mr. Crowther is led to insist on his opinion, as to the inability of pure pus to dissolve the sequestra; in order to prevent the attempts to create pus, with a view to accelerate a cure; instead of attending to better measures.

But what is the origin, nature, and final cause of *Pus*?

When pus accompanies the formation of granulations, some may think that pus is the *residue* left from the materials employed in this creative process. But its frequent appearance

where there is no creation of substance (as for example, where mere inflammation occurs), should lead one, if we pursue this idea, rather to conceive it to be *excrementitious* matter, which is expelled in certain cases, and in certain parts, where the blood-vessels are in a state of specific irritation and peculiar activity.

The colour, consistence, and globules of pus, at first might lead us to suspect, that pus was something between chyle and blood; that is, *young blood*; but the chemical properties of pus do not appear to be precisely intermediate between those of chyle and blood. Often, also, where pus occurs, it is *preceded* by a discharge of a different nature, and thence may still be thought residuary; but in healthy open ulcers, the discharge of mere pus, without apparent intermixture, is kept up without interruption during very long periods; as if it was something independent and specific, elaborated for some express purpose out of the blood, and possibly out of its chyle; its yellowness coming from the bile, from which the chyle itself appears to have been coloured.

REVIEW.

ARTICLE IV.

Disquisitions in the History of Medicine; Part First, exhibiting a View of Physic, as observed to flourish during remote periods in Europe and the East. By Richard Miller, M. D. Lecturer on Materia Medica in the University of Glasgow, &c. &c. Edinburg. 1811.

IT is commonly understood that the history of medicine has already been traced with sufficient accuracy in all ages and countries, where authorities for its elucidation are extant. The labours of Le Clerc, Friend, Haller, and Cabanis, seem to have left very little to be wished in this department of science. But although a general history of medicine is by no means a desideratum at the present day, yet there are undoubtedly parts of it, which are still susceptible of correction or enlargement. The author of the present disquisitions apprises us that he has been induced to attempt them, partly from some singular traits which he thought he had discovered in the medicine of the early Greeks, and partly from the extraordinary advancement made of late years in Sanscrit literature. By means of this last we are informed that long previous to its introduction into Europe, the science of healing had made very considerable progress in Hindustan; yet to commemorate its details, or appreciate its merits, has never yet been the task of any historian in medicine. This new field of research, Professor Miller has attempted to cultivate, and the fruits of his oriental inquiries are to constitute a second volume of Disquisitions. In the mean time the present volume containing general archæological remarks, with speculations on the primitive physic of Greece and Egypt, is submitted to the ordeal of the public.

It must be exceedingly obvious that, prior to the introduction of letters, no very definite information can be expected with re-

gard to the state of medical practice in any country. If the traditionary account of the most important and notorious events, such as battles and sieges, the rise and fall of heroes and of empires, is involved in necessary uncertainty; we cannot expect that a complex science, closely interwoven, in early ages, with mystery and superstition, should reach us in a state capable of affording the least satisfaction. The few circumstances handed down to us from the primitive ages afford matter for speculation to the curious, but yield no certainty to the accurate.

Dr. Miller, seemingly aware of the difficulties attendant on this part of his subject, has thought proper to commence the present undertaking with a sort of history *a priori*, or *presumptive history*, of medicine in its primæval state. He begins with stating the progress of observation and reasoning which would naturally be made by the early and rude nations, in regard to the phenomena of life, health, disease, and death. He details the manner in which a gradual acquaintance would be formed with the nutritious, medical and deleterious effects of the various productions of nature; and from hence assigns to the Materia Medica the supreme honours of antiquity. Afterwards comes the knowledge of practical physic, of anatomy and of surgery, according as men became habituated to watch the progress and cure of diseases, to butcher and dissect brute animals, to sacrifice, eat, or embalm their own species; and to inflict or remedy the wounds and injuries occasioned in war or elsewhere.

After this we are presented with an interesting account of that tract of territory, which we have reason to believe contained the earliest tribes of our species. To this region, composed chiefly of Egypt, Ethiopia, Turkey, Arabia, Persia and India, Dr. M. gives the collective name of the *Primæval Chersonese*.* He expatiates on the exuberance of its soil, the variety and value of its productions, its inducements for agriculture, and facilities for commercial intercourse. He represents that six races or stems have from time immemorial occupied this ample and favoured portion of the earth's surface. These are the Chinese,

* This application of the term *Chersonese*, we think, rather stretches its ancient signification.

the Hindus, the Tartars, the Iranians (or Assyrians), the Arabs, and lastly the Nilotic tribes, or those of Egypt and Ethiopia. Among these he assigns an undoubted claim for priority of civilization to three nations, the Hindus, the Iranians, and the tribes inhabiting the banks of the Nile. The individual claims of these three he compromises by endeavouring to prove from tradition and history, from identity of language, &c. from conformity of religious and philosophical opinions, and lastly, from similitude of corporeal structure; that they were only separate branches of one and the same individual family or race of men. In this investigation the author gives proofs of extensive and assiduous research.

Before quitting the general subject of the Primæval Chersonese, we are made minutely acquainted with its natural productions, or those articles which must have constituted the earliest food and medicine of man.

We now come to the particular history of medicine in early Greece, as it existed during the traditionary ages. On collecting the scattered rays of information respecting this period, chiefly from the poets, our author alights on a curious circumstance, which he makes the basis of this chapter, viz. "that for its first discoveries and improvements medicine in Greece appears indebted almost wholly to two orders of men from whom such benefit was not likely to be derived, viz.

1. The chiefs or sovereigns of its different small communities.

2. The priests, or ministers of religion."

Upon this ground the author proceeds to give us two dissertations on the heroic and the priestly medicine of Greece, and first of "heroic medicine."

On this subject we are told that scarcely a royal or distinguished personage, during the traditionary period, can be named, to whom some degree of credit for medical skill has not been accorded. The ascription of this honour is traced to several causes, such as the obscurity which hangs over the beginning of all arts; the veneration which savage tribes entertain for the character of their leaders; and the policy which would lead these chiefs to maintain their ascendency by the display of every spe-

cies of personal merit or skill, that of medicine being not the least imposing. The practice of these heroic physicians, which the author believes to have been chiefly surgical, is illustrated by various accounts of the therapeutic exploits performed by several individuals. These are Chiron, Esculapius, Machaon, Podalirius, Achilles, Teucer, &c. &c. &c. The claims for medical distinction are, indeed, so numerous that they may be said to amount to no distinction at all, since every man whose name has been handed down to us as holding a rank in a tolerable degree above the vulgar, would seem entitled to enrolment among the faculty. Chiron the Centaur is stated to have been preceptor to nearly all the heroes who figured in the Argonautic and Trojan expeditions. Now as Chiron was one of those universal geniuses who was competent to exercise the arduous and multiform functions of warrior and necromancer, of horse breaker, musician, and doctor; it must be supposed that those who received the supreme honours of his school, were not ushered into the world without a smattering of these various accomplishments. Hence the crew of the Argo might on emergency be considered a crew of the faculty, and the council of warriors in Agamemnon's camp required only a change of occasion to resolve them into a jury of doctors.

We have already intimated that any accounts now extant respecting the medicine of the *early* Greeks must be extremely unsatisfactory. We may now add, that from the few authorities we have, it may be doubted whether any proficiency in medicine was ever made among them beyond what a rude individual would naturally attain in the science of self preservation. The boasted achievements performed by their distinguished individuals, apparently consisted in some trifling and obvious operations, or else in such exaggerated and miraculous performances, as distance all possibility of belief. The heroic or surgical practice among them was confined chiefly to the extraction of weapons and the dressing of wounds. The highest praise which Homer has accorded to the medical or surgical profession is contained in the following lines:

> 'Ιητρος γαρ 'ανὴρ πολλων 'ανταξιος αλλων,
> 'Ιυς τ' εκταμνειν, 'επί τ' ἤπια φαρμακα πασσειν.

Which amount to simply this, that "one doctor is worth a host of other men, to cut out arrows and apply mild dressings." And, indeed, whenever he tells us of such a man being actually engaged in practice, it is commonly in one or the other of the above processes. Now it could require no great depth of intellect to discover that if a barbed arrow stuck in the flesh it could easiest be removed by excision, and that if a wound became dry and painful from exposure to the air, it might be made more comfortable by covering it with emollient applications.

But with such humble and obvious operations as these, the ancient physicians could not have sustained their elevated rank in society, and substantiated their claims upon immortality. It became necessary in order to secure complete ascendency over the public mind, that they should profess an intercourse with the gods, a knowledge of mysterious charms and incantations, and other special gifts peculiar to jugglers in all nations since their time. Very surprising stories are told of Melampus, Polyidus and Chiron. These however are small when compared with the feats of Esculapius, the prince of physicians, and the deified inventor of medicine. Esculapius, in addition to many other astonishing powers was gifted with a very remarkable faculty, peculiar to himself, of raising at pleasure the dead to life. Not less than six or seven instances are on record of distinguished corpses that were benefitted by the exertion of this happy talent. It is impossible to say how far the bounds of science might have been enlarged by so mighty a genius, had not *Pluto* taken alarm at his progress, and presented a memorial to Jupiter, humbly shewing, that if a stop was not put to the career of this officious mortal, people would soon cease to die, and hell would become a desert; whereupon Jupiter interposed, and killed the wonder working doctor with his thunderbolts.

There is reason to believe from what has been said, that the cures effected by these medical worthies were either inconsiderable and real, or else preternatural and counterfeited. We have additional ground for this belief, on finding that frequently, when emergencies occurred, opening a fine field for medical practice, the champions of physic were totally idle or inefficient. When a pestilence broke out among the Greeks at the Trojan

war, we find them with all their heroic and priestly medicine, resorting not to their drugs and preparations, not to any regular system of practice; but simply to superstitious prayers, rites and atonements. The Argonauts, with Esculapius at their head, required the aid of a sorceress, before they could administer an opiate to the dragon that watched their fleece. Chiron died of a wound, or ulcer, in the leg, and Achilles of one in the heel. Such disasters as these last were not to be expected, after what Dr. Miller tells us in his account of Chiron.

"So celebrated was he in tradition for the cure of ulcers, as we are informed by Galen, that when a sore was obstinate and could not be healed up, it was customary in later times to call it a *Chironian ulcer*, intimating by the expression, that it was an ailment of such malignity as to baffle the skill even of Chiron himself."

Now, we conceive, it was no compliment to the Centaur to name only incurables after him. We also conceive, that between Galen and Dr. Miller, the origin of the term Chironian ulcer may have been mistaken, and that it may be derived not from the skill of Chiron in curing malignant ulcers, but from the circumstance of his having languished and died under a malignant ulcer. Galen informs us on this subject that of the phagedæna, or eating ulcer, there were different species, called the Chironian and Telephian. "Harum species quædam sunt, quæ Chironia et Telephia dicuntur." In another place he tells us that the Telephian ulcer was so called from Telephus, who was afflicted with it. Now the case of Chiron was not dissimilar to that of Telephus, as both their maladies were occasioned by the wound of a spear, only Telephus got well, whereas Chiron, after languishing with his lame leg for nine days, either died, or was made into a constellation; for all which the reader may consult Ovid. Fastorum V. 379—414.

Machaon, the son of Esculapius, when wounded at the siege of Troy, retired with Nestor to his tent, where they took from the hands of a woman a farrago of onions, cheese, meal, honey and wine. From Pope's translation of this account in the Iliad, which Dr. M. has quoted, we are led to suppose that this potion

was a *prescription* of the physician himself for his own case; witness the following lines:

> The draught *prescribed* fair Hecamede prepares.

And again,

> This *for the wounded prince* the dame prepares.

Unfortunately, however, there is no sort of authority in the original for the above expressions, and it appears that Hecamede prepared the draught, probably of her own invention, to treat her master Nestor as well as his guest Machaon, and this too for the sole purpose of assuaging their thirst.

> Τοῖσι δὲ τεῦχε κυκειῶ ἐϋπλόκαμος Ἑκαμήδη. Il. λ. 623.
> Τω δ' ἐπεὶ οὖν πίνοντ' ἀφέτην πολυκαγκέα δίψαν.* 641.

It is a little remarkable that the learned professor should copy out the whole Greek passage for his book and overlook such words as τοῖσι, σφῶϊν, σφι and τω; or imagine them to be meant for Machaon individually. We are half inclined to suspect that he placed undue reliance on the translation, when we find him leaving off his Greek in the middle of a sentence, and observing that, "it might be difficult in English poetry to discover a translation more distinguished for a happy mixture of *precision* and elegance, than the above version of Pope."

One more of these worthies and then we have done with "heroic medicine." We presume that the name of Achilles will not yet descend to oblivion, even though our author should fail in his attempts to dub him also a doctor of medicine. Nevertheless Achilles, it seems, was a pupil of Chiron, he cured the wound of Telephus with the rust of his spear, and the plant Achillæa, or yarrow, had the honour to be named after him. But it ought not to be forgotten that the circumstance of his pupilage was common to most of the pre-eminent heroes of his time, and that in the cure of Telephus he had scarcely any merit. Telephus consulted the oracle, and was told that his wound could only be healed by the same *spear* which had occasioned it. Accordingly he applied to Achilles, whose spear had done the mischief, and

* The translations of this passage by Cowper and Dacier are correct. Chapman has the same inaccuracy with Pope.

requested his medical assistance. Achilles at first refused, saying that he was no physician, but afterwards was prevailed on to scrape the rust of his spear into the wound, which in due time got well.—With regard to the plant Achillæa, we presume its name has as much to do with medicine, as that of the plant Jeffersonia.

We now come to consider the second department which Dr. Miller has made in the physic of Greece, viz. his Priestly medicine. As he has shown that the medicine of heroes was chiefly surgical, he now makes it equally clear, that that of priests and conjurors was mere "practical physic." For this he gives us all the presumptive evidence which can arise from the natural ascendency of priests and wizards over the public mind, and from the analogy of customs in all the barbarous nations in the world. He gives us, however, only two instances of priest-physicians in Greece, viz. Melampus and Orpheus; of whom Melampus appears to us to have been only a fortune hunter, who cured the daughters of Prœtus, of real or pretended madness, that he might gain the hand of one of his patients, together with her kingdom in marriage; while with regard to Orpheus, there is very little authority for his having practised physic in any particular instance, and his high reputation is sufficiently supported by the established fact, that

"He *played* so well he moved Old Nick."

On considerations like the foregoing we are disposed to ascribe to the ancient Greeks the credit of very little real proficiency in the art of healing. From similar motives we doubt the correctness of Doctor Miller's belief that Greece was indebted for its first discoveries and improvements in medicine solely to two classes of men, viz. the chiefs or sovereigns, and the priests or ministers of religion. Unwilling however to interfere with the doctor's ardor for classification, we will only suggest, for a second edition of his work, the propriety of adding a new class or department in primitive physic, to be called the department of *old women*, or of *female medicine*. These early practitioners of physic we think he has treated with unmerited neglect, for we will engage, where he produces one in-

stance in Greece of a priest skilled in medicine, that we will furnish two of females possessing the same accomplishment. It is sufficient now to mention only the names of Circe, Medea, Angitia, Agamede, Helen and Oenone.*

We may here take occasion to remark that frequent errors of press occur in the author's quotations from the languages throughout his book. Part of these are corrected in the Table of Errata at the end, but others remain. In the following uncorrected line from Horace we presume the mistake is not wholly typographical.

Cras magnum iterabunus æquor. P. 143.

For which read

Cras ingens iterabimus æquor. Lib. 1. Ode 7.

The last portion of our author's work embraces the history of medicine in Egypt and the East; and on this subject our limits compel us to be more brief. The advantages possessed by the Eastern countries over European Greece for the early cultivation of science, are said to have been the coalition of their inhabitants into large and mighty empires, instead of petty states and communities; and also the peculiar nature of their ecclesiastical institutions, in which an hereditary priesthood was placed in possession of all the facilities and inducements for scientific speculation. The invention of letters, or alphabetic characters, was among them an early auxiliary to the cultivation of the sciences, and medicine was not the last to profit by so signal an advantage. Some of the earliest lettered productions contained copious treatises on the healing art as an integrant portion of their contents.

The very ancient and celebrated personage *Thoth*, or as he is called by Dr. Miller, *Tot;* and who is the same with Hermes, or Mercury of the Greeks, seems to have been the founder of

* "In these early ages all the knowledge of the tribe formed a common stock; and their imperfect arts might be exercised by all those who were endowed with a certain portion of intelligence. Medicine therefore existed before there were any regular physicians."

Cabanis' Revolutions of Med. Science.

medicine in Egypt. His writings, afterwards held sacred, were divided into 42 books, six of which treated of medical subjects, viz. one of anatomy, one of diseases, one of instruments, one of medicaments, one of disorders of the eyes, and one of diseases of women. While the higher orders of Egyptian priesthood were employed in the study and execution of religious and philosophical offices contained in the former books; a second or inferior class were busied in the study and practice of healing. The Pastophori, for so the cultivators of physic were called, were bound to make themselves intimately acquainted with the medical scriptures of Thoth, and so long as their practice was strictly conformable to these, no blame was incurred by them. On the contrary, if any practitioner ventured to deviate in the least from these sacred rules, he became responsible with his own life for the safety of his patient. This circumstance must have furnished a powerful check to improvement, and kept the science of medicine long in a state altogether stationary.

Of the other peculiarities in Egyptian practice, the following are among the most remarkable. The art was made altogether hereditary, so that "he who was born a physician was prohibited equally by heaven and by law from abandoning the occupation of his ancestors." The profession was also subdivided into minute departments so that each particular disease had a separate healer. Some took charge of disorders of the eyes, some of the head, some of the teeth, some of the abdomen, &c. The vast number of individuals who were engaged in some branch of medical practice, led to the assertion of Homer and Herodotus, that in Egypt every man met with was a physician.

What were the particular modes of practice enjoined by Thoth, it is impossible now to know, for the books of the Pastophori have long since been lost. Dr. Miller, however, has industriously attempted to glean whatever authorities were afforded respecting them, from their successors in art and science, the Greeks. He has told us that the Pastophori, and even the kings, were wont to immolate and dissect beasts and human victims, but with what proficiency in anatomy it is not known. In the science of diseases they appear to have had some idea of critical days, to have divided disorders into acute and chronic,

and to have ascribed their pestilential distempers to a morbific principle in the air. In the Materia Medica they seem to have been acquainted with many efficacious articles, together with their most useful forms of composition.

Having now run through the contents of this volume, we would observe, that in general it is far from being an uninteresting production. The extent of the author's researches, and the ingenuity of his deductions, will afford some novelty and instruction to most readers. His predominant fault is a disposition to annex an undue consequence to circumstances which are doubtful or unimportant. We think he might profit by the observation of Cabanis, that in a subject where materials to compensate inquiry are wanting, "the friends of truth should not lose their time in forming vain conjectures, however *learned* they may happen to be."

ARTICLE V.

An Essay on the disease called Yellow Fever, with observations concerning Febrile Contagion, Typhus Fever, Dysentery, and the Plague, partly delivered as the Gulstonian Lectures, before the College of Physicians, in the years 1806 *and* 1807. *By Edward Nathaniel Bancroft, M. D. Fellow of the Royal College of Physicians, Physician to the Army, and late Physician to St. George's Hospital.* London; T. Cadell and W. Davies. 1811.

The name of yellow fever has lost some of the power to excite a general interest among us, which it has heretofore possessed. Some consider it as relating to an old story; they think it is out of fashion; and they care no more about it than a young beau does respecting an old belle. Others believe that all questions about it are settled, and that it is needless to spend more time in examining them. Besides all this we true Americans consider this subject as our national property, and are jealous of any attempts among Europeans, especially among Englishmen, to assume any control over it.

It is very possible then, that the title of this book will not secure to it so much attention as is necessary, in order duly to estimate its merits. We will endeavour, however, to perform our duty impartially, in making known to the faculty here, the nature and the merit of the labours of our transatlantic brother.

We will first premise that this gentleman has some better "right" to talk about the yellow fever than most of the Fellows of the Royal College of Physicians, seeing that he has actually witnessed many cases of this disease. But let us state his qualifications at large.

Doctor Bancroft must have had a regular education for, and regular induction to his profession, else he would not be a fellow of the Royal College. He has, it seems, been physician to St. George's, one of the most respectable hospitals in London, and physician to the army. He was with the British army in Egypt, and in the West Indies; and in the course of the work it appears that he has visited various parts of Europe, and some of the southern parts of the United States. Add to all this that he evinces extensive medical learning, and appears to have an observing and discriminating mind, with great fairness and candour. That he was in some esteem where he was known, is shown by his having been appointed to deliver the Gulstonian lectures in 1806.

We think then that Dr. Bancroft is well qualified to examine the various subjects which he proposes in his title page.

The Essay on Yellow Fever is divided into four parts; to which is subjoined a fifth part, containing three chapters, "on typhus, on dysentery, and on the plague;" and likewise "eight appendices, to confirm or illustrate particular positions contained in the essay."

The following extract from the "Advertisement" in the first part of the book, will show what objects the author had in view.

"There are no diseases which affect mankind so extensively, or produce so much mortality, as some of those which occupy this volume; and as very opposite opinions are entertained, respecting their origin and contagious powers, real or supposed; and as this opposition of opinions, is disreputable both to the science and professors of medicine, and incompatible with the best interests of mankind, I have endeavoured to remove all doubt

and obscurity from these important questions, and place them beyond the reach of future controversy. How far this endeavour will prove successful, time must discover." Page vi.

To the above we add the following from the same advertisement, by which the author's opinion of his own merits, and his claims will appear in his own modest language.

"I know, indeed, that many of these facts, and arguments, have been already noticed; some by one, and others by different writers; but as in these ways, they have failed to produce that general conviction, which is most desirable, I have thought I might render an important service to mankind, by *so* collecting and arranging the proofs, and reasons connected with this question, as would best fit them to elucidate, and support each other, even if I had not been able to add any thing *new*, and valuable from my own stock." p. vii.

We will now proceed to analyse this work with all possible regard to brevity, and shall make our observations on its contents as they come under notice.

The first part gives an account of the symptoms, of the appearances on dissection, and of the mode of treatment best adapted to yellow fever. The author objects to the name as being derived from a symptom not constant, nor peculiar in this disease. He observes that the name has been employed indiscriminately, and makes some remarks on this head, which seem to be worthy of quotation.

"In those countries in which the temperature of the atmosphere is usually heated, during certain seasons, to 85°, or more of Farenheit's thermometer, in the day time, all febrile affections, however produced, have a tendency, in consequence of the action of heat on the human body, to assume the violent and dangerous form, which is generally considered as characteristic of the Yellow Fever. Thus, the fevers which sometimes originate from intoxication, and other excesses, from taking cold, or from fatiguing exertions of body, while exposed to the sun, or strong agitations of mind, are, in those hot seasons, liable to be accompanied with the same severe and fatal symptoms which occur in the terrible Fever that occasionally attacks a great part of the population of certain towns situated in warm latitudes; and from this resemblance, the term Yellow Fever has been equally applied to Fevers, which are strictly sporadic, and comparatively rare, and to Fevers truly Epidemic. But, although the same symptoms be observed in the Sporadic, and the Epidemic Yellow Fever, the course of these is not exactly similar, and their causes are totally different.

The sporadic Fevers are always, I believe, of the continued type, and are brought on by certain affections of the body and mind, operating only upon a few individuals; whereas the Epidemic Fever almost always manifests a disposition to remit, unless the speedy death or recovery of the patient precludes a second paroxysm; and it arises from causes of a general nature, such as are capable of operating on a considerable number of persons at the same time." p. 6, 7, 8.

The causes to which the disease, when epidemic, is attributed by Dr. B. are marsh miasmata, and great heat. To these something peculiar may perhaps be added, as arising from large cities; or perhaps it is only the greater heat of such places that makes them more susceptible of this disease.

The author does not profess to enumerate all the symptoms which have been noticed, as these are detailed in many other works. He, however, states those which are common, with great accuracy and perspicuity. In the following passage some of his leading opinions, with respect to the symptoms and nature of the disease are happily stated.

"The features, which are the most remarkable in this disease, are the affections of the head, of the stomach, and of the skin; and I therefore propose to offer some observations on each of them. There is great reason to believe, both from the symptoms, and from the frequent examinations which have been made after death, that most of those, who die of the Yellow Fever, are destroyed in consequence of some irreparable injury having occurred either in the brain, or in the stomach. It seldom happens, however, that these organs are both mortally injured in the same subject; more commonly, one of them only is dangerously affected. I do not here mean to affirm, that there have been cases of the Yellow Fever, in which a fatal affection of the head had supervened, without any disorder of the stomach; or cases in which the stomach was much diseased, while the brain continued in a sound or healthy state; for I believe, on the contrary, that these organs jointly suffer more or less in every case and species of Fever; but, according to my experience, and that of several very respectable practitioners, with whom I have conversed on the subject, those patients in the Yellow Fever, who die from an affection of the head, generally perish early in the disease, and with less vomiting, especially of blackish, or dark-coloured matters; whereas, on the other hand, those in whom this last symptom greatly predominates, are usually found to have their mental faculties clear, though often much weakened; and they seldom expire before the end of the fourth, or the beginning of the fifth day."

p. 16, 17.

Dr. B. considers the disease a remittent fever accompanied by inflammation of the head or stomach, or both, and sometimes by general inflammation; sometimes also by irregularity in the circulation. Hence the paroxysm is prolonged, as has been well explained by Dr. George Fordyce; and hence life is so often speedily destroyed. The appearances on dissection correspond with these views of the disease. The brain and its membranes, the stomach and sometimes the intestines show marks of inflammation. In the lungs also some vestiges of a similar affection have been noticed, but not such as to have occasioned death.

An explanation is offered of the nature of the black vomit, which has been considered by some as peculiar to this disease, and which is certainly more common in it, than in any other. On this head the author refers principally to a paper by Dr. Physick, a gentleman of whom our country has reason to be proud. The opinion of this gentleman, as is probably known to most of our readers, is that the black vomit is "a secretion from the inflamed vessels of the stomach and intestines." Dr. Bancroft agrees that it is a consequence of inflammation in the stomach, but not that it is produced by secretion. This is his argument.

"For it is to be supposed that the villous coat, and the glands beneath it, are the only parts of the stomach by which secretion can be performed; and proofs have just been adduced, that the matter in question may be formed without the co-operation of that membrane, or the glands connected with it, since it has been found in the extremities of arteries, and lying beneath the villous coat itself." p. 27.

He believes this matter to be nothing else than blood poured into the stomach from the small vessels, which

"Having been afterwards triturated by the violent and frequent contractions of that organ, in the efforts to vomit, has had its appearance as a coagulum of blood altered, and its colour darkened by the gastric juice, or by some chemical decomposition, either spontaneous, or produced by the action of the air, or other matters contained in the stomach." pp. 28, 29.

Here we cannot avoid asking how the blood could be triturated, or acted upon by the gastric juice, while it remained "in the extremities of arteries," It might indeed undergo some

spontaneous decomposition in these vessels, if they had lost their life; but we apprehend that the spontaneous decomposition of the blood does not usually produce the matter in question. If then Dr. B. has refuted the opinion of our countryman, Dr. Physick, he does not appear to us to have established his own; and we must remain satisfied with *what has been demonstrated* by the anatomical pathologist, that the black vomit is "a consequence of inflammation in the stomach."

Dr. Bancroft is not satisfied with any of the explanations, which have been offered, respecting the yellowness of the skin, a symptom so common in this disease, and from which it has derived its name. He offers one of his own; and this is that by the pressure on the liver occasioned by the convulsive actions of the diaphragm and abdominal muscles in vomiting, the bile is forced out of the *pori biliarii* in every possible direction; —accordingly, while one portion goes to the hepatic duct, another goes to the hepatic veins. "That a subtile injection thrown in by the hepatic duct will escape readily by the hepatic veins" in the dead subject, we know from Baron Haller. But that long continued or violent vomiting *alone* will produce a similar effect on the bile in the *pori biliarii* of the living subject, is not so clear to us. We will not ask to have this mechanical operation more perfectly explained; but we will ask why the same effect is not more frequently produced in other cases of violent vomiting. Why is it not common to see women in the first months of pregnancy as yellow as in the fever under consideration? It is not rare to see pregnant women retching and vomiting, and straining with an empty stomach, as violently, and for a longer time than occurs in the yellow fever; yet jaundice cannot be a frequent consequence, or it would long ago have been noticed and established.

The explanation of symptoms is one of the most difficult tasks for the pathologist. If we cannot admit that of our author in this instance, we confess ourselves unable to offer any, which appears to us better. It is more important to notice that this symptom is, in the opinion of Dr. Bancroft, and "of many practitioners with whom he has conversed, of little real importance

in the yellow fever."—His opinion is very different in regard to certain spots or patches of an obscure yellow, or dingy hue, and intermixed with petechiæ. These patches indicate extreme danger. (See p. 48.)

Yellow fever has often been confounded with *typhus* (by which our author means the fever commonly called jail and hospital fever,) and with the plague. Dr. B. points out what he conceives to be the distinctions between the yellow fever and those diseases. The distinctions he points out are well worthy our attention; but we have not room to state them, and must refer the reader to the work. He says, among other things, that yellow fever "is attended with *many* different symptoms" from those of typhus. It would have pleased us very much to have had these many different symptoms pointed out by a writer of so much accuracy. We are not sure for ourselves that we know of any symptoms belonging to yellow fever, which do not occur also in typhus; although some symptoms are much more common in one, and some in the other disease. Are not the distinctions to be sought for mostly in the force, duration, and order of symptoms? And after all, can we distinguish perfectly without some reference to climate and season?—For instance, may we not believe that a man is affected with yellow fever when he exhibits certain symptoms in the Havanna, or in Philadelphia, in the month of September, when we should believe he was affected with typhus, if he exhibited the same symptoms in London, in the month of December? In some cases we feel assured that by the symptoms alone a distinction could not be made, at least not in the present state of our knowledge.*

We now follow the author to his remarks on the treatment. He professes not to offer a universal method, but only "points out the general principles by which, as he conceives, the most

* In these opinions we are supported by Dr. Robert Jackson, a gentleman who has had great experience in both typhus and yellow fever.

"It is a matter of the first importance to discriminate between epidemic and contagious fever; but as the knowledge of this cannot be attained from a comparison of the existing derangements, or actual symptoms of the disease, collateral circumstances are required to furnish their aid."

Outline of the Hist. and Cure of Fever. Chap. VII.

urgent symptoms may be relieved, and the violence and fatality of the fever lessened." He treats of the different remedies under distinct heads.

Bleeding. Concerning this evacuation there has been great difference of opinion, and the partizans on both sides have probably been too violent in their practice. Dr. B. well observes, that abundant experience has proved that bleeding is not necessarily fatal. He saw the fever mostly in the W. Indies, where "it seldom occurs, especially in its violent forms, among any others than persons recently arrived from temperate climates, the greater part of whom are commonly young, robust and vigorous." While among the natives the simple remittent fever prevails, among these strangers that fever is accompanied by general inflammation, or by inflammation of the most important organs in the body. In such cases experience appears to have convinced Dr. B. that bleeding is useful. His directions as to this evacuation correspond with those of Dr. Fordyce, except as to quantity. The blood should be drawn "as early as possible after general inflammatory action is perceived, from a large orifice," and the whole quantity judged requisite should be taken at once. It is best that this should be done within twelve hours from the attack. Dr. B. however believes that the quantity requisite in most instances is greater than was supposed by Fordyce; the latter mentioning ten to sixteen ounces, the former from twenty-four to thirty. The opinion of Dr. Bancroft is entitled to the greatest regard on this subject, as it is founded on great personal experience; and it certainly coincides with our own.

Dr. Bancroft's directions imply that he thought bleeding proper only where "general inflammatory action is perceived." (See p. 55.) From the preceding passages, however, we think this is not exactly his opinion; and that he would bleed, where there was reason to suppose a local affection of the brain, or stomach, even though general inflammatory action should not supervene. This is a case which certainly does happen, although not expressly noticed, we think, by Bancroft, and although the accurate and learned Fordyce does not seem to have recognised it. It has been described in various ways by different writers, and

is, we conceive, the case intended by Dr. Rush, where he treats of suffocated excitement.

Cold water. The author traces the use of this invaluable remedy in febrile diseases to Hippocrates, and states, that it has been much employed by others in ancient and modern times. To Dr. Currie, however, he gives the credit of being the discoverer of the true principles in regard to the use of this remedy; as having "called in reason and experience to support and confirm what he has asserted" respecting it. Dr. Bancroft states the inconveniences, which sometimes arise from pouring water over the patient, or washing him with sponges; and he proposes as "a safe and useful substitute" that the patient should be covered, "as he lies in bed, with a single sheet wetted with cold water." To the addition of any spirituous liquor he objects, as unnecessary; and because "it may be disagreeable, if not injurious to the patient, to inhale the spirituous vapours."

Besides the external use of cold water the author recommends the drinking it in small quantities frequently, which he has found very useful in moderating excessive heat, and lessening the violence of febrile action, in disposing the skin to perspire gently, and in preventing inflammation of the stomach, or relieving it when excited.

Purgatives. The removal of fæcal matter by a cathartic is recommended in the first stage of the disease. For this purpose "calomel with scammony, jalap, gamboge and similar purgatives" are thought the best articles by Dr. B. and he advises that they should be repeated as may be requisite, in order to procure two evacuations daily during the continuance of the fever.

Emetics, and particularly antimonial emetics, are highly probated by Dr. B. as well as by some other writers of good reputation, in the treatment of yellow fever. Dr. B. objects to them for the following reasons; first, they rather increase than diminish the nausea; secondly, they exhaust the strength, increase the circulation and propel the blood to the head; thirdly, the stomach is very easily rendered morbidly irritable in warm climates in all diseases, especially in yellow fever; and emetics make it more so. The object is to calm the stomach and remove the nausea, for which purpose our author has found small

doses of opium (frequently repeated) the best remedy; at the same time, however, he has enjoined great abstinence from both liquids and solids, has applied a large blister or sinapism over the epigastric region, and has been careful to promote the regular action of the intestines.

Sudorifics are considered by Dr. B. as always useless, often injurious, more especially if of the antimonial kind. A perspiration will ensue when the temperature of the body is reduced to its natural standard.

Peruvian bark and cordials. The Cinchona is recommended "as soon as the febrile commotion subsides." A return of the paroxysm may thus be prevented, or very much mitigated. If the strength begins to sink, the Cinchona should be administered with aromatics and wine, and even with brandy, according to circumstances.

Mercury. With regard to the use of this powerful medicine in yellow fever there has been a considerable difference of opinion. All agree in the use of it as a cathartic, but while some believe a salivation useless at least, if not injurious, others think it necessary to produce this effect, as the only certain mode of saving their patients. Dr. Bancroft entertains the former of these opinions. He seems to grant to those opposed to him in this respect that most of those, who are salivated, recover from the disease, although he says that this is not uniformly the case. But he does not allow that the recovery is the effect of the salivation. He believes that where a salivation is produced, it is because the irritability of the system is so far unimpaired, as that the patient would have recovered without the aid of the mercury. He grounds this opinion partly on these well known facts, viz; that in the cases, where mercurials are supposed to be successfully employed, a small quantity, as twenty or thirty grains of the submuriate is frequently sufficient; while in other cases, which have proved fatal, very large quantities, as one and even two thousand grains of the same preparation, have been given without producing salivation.

The question would be solved if, among a large number of patients, under similar circumstances, of whom one half taken indiscriminately used mercurials, and one half did not—if, we could

ascertain in which half there occurred the largest number of deaths. But though there must have been experiments enough for the purpose, yet it seems impossible to bring those experiments into such fair comparison as to decide the question. Dr. Bancroft says that "after some experience, assisted by no ordinary portion of inquiry and information," he has not been able to discover that more persons recovered, in whom salivation was attempted, than among those, in whom it was not attempted.

The use of the submuriate of quicksilver (Calomel) as a purgative in the yellow fever, Dr. Bancroft, in common with most others, believes to be very beneficial. In the early stage of the disease therefore, there would not probably be much difference in regard to the use of this article between him and the moderate salivators.

We will now state that we are disposed to acquiesce in a great measure in the practice proposed by Dr. Bancroft. We cannot, however, entirely divest ourselves of an opinion we have heretofore entertained, that if the period of the dangerous stage of yellow fever were sufficiently long to enable us to produce, not merely a soreness in the mouth, but the full and perfect effect of mercury on the system, this might then be relied on with considerable confidence. But we apprehend that this can seldom be effected, and the attempt would too often divert us from employing those remedies, which are more speedy in their operation, and of which the benefit in removing the dangerous symptoms has been sanctioned by experience.

We wish to show why we have sometimes thought favourably of the plan of salivation in yellow fever. It is briefly this. In common with many other practitioners, especially in New England, we have been in the habit of employing mercurials in small doses, so as to affect the system, in our autumnal fevers, which are bilious remittents of a character comparatively mild, and in inflammatory disorders; such particularly as pneumonia, hepatitis and peritonitis.

The following have appeared to us the results of experience in these cases. When, after evacuations of the stomach and intestinal canal, a soreness of the mouth has been induced within the first week of our autumnal fever, there has been seen at

once an evident effect. Often times the whole disease has disappeared, or a perfect crisis has taken place immediately. More commonly, however, the crisis has been partial and imperfect. All the most formal appearances of fever have subsided; but the stomach has not resumed its functions, and sometimes has seemed to go through the whole ordinary period of the fever in a state of disease, while the rest of the system has recovered as much as it could without the co-operation of this important organ. Though not necessary in this place, we may remark, that relapses are readily produced by imprudence in this state of things, and most particularly by taking food; such as requires of the stomach exertions, to which it is incompetent. When the affection of the mouth commences after the first week, and perhaps after the fourth day, the effect is proportionally less beneficial; and after the second week we believe it is more injurious than useful.

This is a subject on which we have not any pride of opinion, and we wish not to produce any by committing ourselves in terms too little qualified. We therefore add that such beneficial effects have not always ensued in the disease referred to; and that we have sometimes, though rarely, had the mortification of carrying a patient through a fever under a salivation. We think this has happened mostly, when the salivation has been induced very suddenly and has been very severe; and we have been ready to believe that in these instances there had taken place rather a severe local affection, than an impression on the whole system, such as is commonly supposed to accompany a mercurial affection of the mouth. Yet if this opinion be just, these instances are still objections to the plan of salivation.

We do not recollect more than one instance of fever where death has ensued after salivation; and in this case the patient had mended so, as from keeping his bed, to be able to put on his clothes and walk across the chamber; but after this the affection of the mouth subsiding, a relapse took place and the issue was eventually fatal.

In regard to inflammatory diseases, both acute and chronic, we have certainly found advantage in treating them with mercurials; however this may appear impossible, as we know it does,

to some Europeans of the first respectability in our profession.* We shall speak only of acute inflammation, as this has some bearing on the subject of yellow fever. In cases of acute inflammation, where an impression can be made on the whole system by mercurials before any effusion has taken place in the part inflamed, a termination by resolution is often produced; and at least the disease is much diminished in violence and in extent. When the effect has not been produced so early, the disease has still been moderated; all farther extension of it has been prevented, and a more perfect termination has seemed to be the consequence.†

But we must not forget the work under review, of which we believe that an analysis will be much more interesting than any opinions we can offer. It is time then to announce that we have arrived at the end of the first part.

It is the object of the second part of this work to ascertain the cause of yellow fever. As preparatory to the attainment of this object the author has deemed it expedient to discuss two problems, on which very respectable and learned physicians have differed. These problems are the following:

"First. Are *all* fevers naturally contagious, or capable of exciting fevers in other persons not predisposed thereto?

"Second. Can a fever, strictly contagious, be generated by an accumulation of filth, or putrifying, or putrid matters, or by crowding healthy persons into confined, or ill ventilated and unclean places?"

As supporting the affirmative of the first question, the author gives us the respectable names of Cleghorn, R. Hamilton, John Clarke, and "more especially" of Geo. Fordyce. Nevertheless Dr. Bancroft feels himself warranted by facts to oppose these high authorities, and undertakes to prove that some fevers are not contagious. In doing this he refers particularly to a distinction as to the evidence to be given in such cases, which was pointed out by Dr. Haygarth. The distinction relates to proofs *affirmative* of the existence of contagion, and those *negative* in

* See Saunders on the liver.

† In regard to the opinions here expressed on the use of mercury, we should be happy to receive communications for our Journal from men who will think and observe, and observe and think.

this point. "Observation, or experiment," says Dr. Haygarth, "can determine with much greater certainty what *does not*, than what *does*, give infection."

We have then to inquire whether fevers have not occurred under circumstances, such as in common opinion are favourable for the display of their contagious properties, without having manifested such properties. If they have so occurred sufficiently often to preclude the supposition of some peculiar combination of accidental and unknown circumstances unfavourable to contagion, than Dr. Bancroft's first problem, must be decided in the negative. If, for example, it could be shown, that in repeated instances, a number of men affected with violent fever, have been brought on board ships, in which there were large crews, and have not communicated the disease to any of the persons on board, it might be fairly inferred that the fevers of such persons were not contagious. Now the cases, which Dr. Bancroft has brought forward, are precisely of this description. He relates seven instances,* in which large ships, having anchored at a sickly place or port, a certain number of their men have been allowed to go on shore, and to remain a night; these have all, or nearly all, been affected with violent fevers, fatal in most of the cases; but not a single man has been found to sicken in consequence of communication with the men thus affected. To these he adds the instance of the sickness among the British troops in Walcheren, in 1809. Almost thirty thousand of these troops were attacked by fever, of which nearly one sixth died. But among these Dr. B. has sought in vain to find a single person, to whom the disease proved contagious; and he believes that the medical men who saw the disease were unanimously of opinion that it was not contagious.

Having detailed the evidence here described, Dr. B. adopts the conclusion, which seems to us irresistible, that all fevers are not *contagious*; whereby we mean that they do not possess the same property as the small-pox and measles.

* These are given on the authority of Lind, Trotter, Badenoch, and Clark.

(To be continued.)

INTELLIGENCE.

The editors have recently received a number of valuable works, on the diseases of the eye, among which are the late publications of Mr. Gibson, Mr. Muter, Dr. Read, Mr. Stephenson, and Mr. Saunders. When their limits shall admit, they will endeavour to present a view of the most important parts of these treatises. At present, they can only give the following case, which exemplifies the method of Mr. Gibson, for curing the secondary cataract.

Case of Operation for Secondary Cataract. Communicated by Dr. John C. Warren.

On the 24th day of January, I performed the operation for secondary cataract, agreeably to the mode proposed by Mr. Gibson, in presence of the students of the medical school of Harvard University. The patient had been couched by different gentlemen, four times in the right eye, and twice in the left; yet he saw very little with the right, and not at all with the left. On examining him, we could not discover any distinct opacity in the right eye, but in the left appeared a large opaque mass behind the pupil, which seemed to change its situation occasionally, but never so much as to admit of his seeing any object with that eye. The pupils were both moveable. The left was slightly irregular. The patient was placed in the usual position for removing the cataract. The eye-lids were separated by the thumb and finger of the left hand, and then, a broad cornea knife was pushed through the cornea at the outer angle of the eye, till its point approached the opposite side of the cornea. The knife was then withdrawn, and the aqueous humour being discharged, was immediately followed by a protrusion of the iris. The forceps, made by Mr. Beath of Boston, agreeably to the plate of Mr. Gibson, were then introduced, and carried the iris gently into its place; from which it did not afterwards re-

move. The opaque body eluding the grasp of the forceps, a fine hook was passed through the pupil, and fixed in the thickened capsule, which was immediately drawn out entire. This substance was quite firm, about half a line in thickness, a line in diameter, and had a pearly whiteness. A light bandage was placed on the eye, and the patient directed to wash it occasionally with warm water. On the fourth day, we examined the eye closely and found the cornea healed, the aqueous humour secreted anew, and the eye plump and fair as before the operation, without opacity, and nearly free from inflammation. No inconvenience followed, till about two months after the operation, when a slight inflammation was brought on by some accident. Two or three bleedings removed this disorder. The patient is now well, and sees to distinguish every object with the left eye, while the right, which is equally clear, has a very imperfect vision.

The event of this operation shows the superiority of the new method, to the frequent repetition of couching.

Oil of Turpentine in Burns.

Since the publication of some remarks on injuries by fire, in the first number of this Journal, additional grounds have occurred to confirm the preference of other remedies before the oil of turpentine in ordinary cases of burns. In the instance of a patient who was violently burnt over the whole of the back and both arms, I applied the terebirthinate liniment of Mr. Kentish to the left arm, and simple olive oil to the right. The patient complained of severe pain in the left arm during a great part of the subsequent night, although an hundred drops of laudanum were administered. The next morning nearly all the suffering was referred to this arm. The other parts were comparatively easy, although some of them to appearance had suffered more by the fire. On exchanging the dressings for the liniment of lime water and oil, the patient expressed the utmost satisfaction from the comparative ease which the exchange afforded. Every subsequent dressing with the lime water and oil

produced the same evidence of mitigation in the pain and soreness.

The late conflagration of the Richmond theatre must have produced in the persons of many survivors the most deplorable instances of the morbid effects of fire. A very extensive field was here opened for watching the influence of different applications and methods of practice. I take the liberty to insert the following extract of a letter from Dr. Joseph Trent, a distinguished practitioner in that city.

"Dr. Kentish's practice was intended generally to have been pursued by the faculty here, but could not be in the proper time and manner, owing to the great confusion and consequent difficulty of getting from our apothecaries, alcohol, spirit of turpentine, &c. When the means were obtained, the practice was pursued, even many hours after the accident. The result has not been, I think, favourable to the stimulant practice, as recommended by that gentleman. Most of those who were severely burnt, have died. In cases of less severity, the pain excited by this practice was grievously complained of. This may have been owing to its adoption too long after the accident."

It would not have been thought necessary to bring forward this additional testimony against a painful and irritating method of practice, were it not for the powerful support which has brought it into extensive use, and opened its way into many of the elementary and common-place books of our profession.

J. B.

Mr. Travers's work on "Injuries of the Intestines" is now published. It is of an experimental nature, and is therefore a valuable acquisition to the surgical art. It seems from the result of his experiments, that the cut extremities of a divided intestine, require such a ligature as will produce contact of the whole edge of the gut. In the spacelation, so often the result of strangulated hernia, Mr. Travers, in opposition to the common practice, is of opinion, 1st. That the stricture should not be divided. 2d. That the mortified intestine should not be removed, unless previously separated. 3d. That no suture should be applied to the sound intestine, for he incontestibly

proves, by observations and experiments, that nature carries on so effectual a process, as not to require the aid of art.

A society has been formed in Germany, by Professor Wenrel, for investigating the cause of *epilepsy*, with a view to discover a successful mode of treatment. In each of twenty brains which had been dissected before February, 1808, they found the *pituitary gland* in a state of disease. This gland was sometimes very vascular, sometimes pale ; it was hard in some instances, soft in others. In ten cases it contained a yellow, solid friable substance, at the point of union of the two lobes. Sometimes it was inflamed. In fifteen cases the brain was sound. The *pineal gland* was always softer than natural. In one case the fits were produced by a delicate spicula of bone, which being removed by trepanning, the fits were cured. We have noticed a case of violent habitual epilepsy, in which a spicula of bone projected from the upper part of the parietal bones near a quarter of an inch into the cavity of the cranium, covered by the dura mater.

Mr. Ellis has published " Farther inquiries into the changes induced on atmospheric air, by the germination of seeds, the vegetation of plants, and the respiration of animals." From the experiments adduced by Mr. Ellis, it appears that vegetables in the *shade* emit carbonic acid ; but that they absorb it while they are exposed to the *rays of the sun ;* and that a portion of carbonic acid assists their growth. The common opinion, that the nocturnal exhalation of plants is unsalutary, appears therefore to be well grounded.

" Juniperi gravis umbra ; nocent et frugibus umbræ."

It appears also that plants grow best in impure places, if acted on by the rays of the sun, and purify the air, by absorbing its carbonic acid. Mr. Ellis does not seem to have yet succeeded in proving the opinion which was the principal object of his labours ; viz. that the change induced on air by animals and vegetables takes place, not in their vessels, but in the atmosphere, exterior to their surfaces ; and that carbon is thrown out by them, to unite with substances which it may happen to

meet. He finally declares that he does not mean to deny that oxygen may not exert attractions towards the vegetable body, and by its mechanical, or chemical properties, penetrate in a certain degree the pores of the seed, and then unite with its carbon, after it has been brought into a state fitted for such combination by the spontaneous changes described above.

Diabetes Mellitus.

Dr. Wollaston has made a number of experiments for the purpose of ascertaining whether sugar can be detected in the serum of the blood of diabetic persons, an opinion advanced by Cruickshank, and published by Rollo in his work on this disease. Although the tests employed were sufficiently delicate, and his investigations were extended to experiments with other substances capable of being absorbed, he was unable to discover any trace of the saccharine principle in this fluid. Hence he concludes that, "in order to account for the presence of sugar in the urine, we must consequently either suppose a power in the kidneys of forming this new product by secretion, which does not seem to accord with the proper office of that organ; or, if we suppose the sugar to be formed in the stomach by a process of imperfect assimilation, we must then admit the existence of some channel of conveyance from the stomach to the bladder, without passing through the general system of blood vessels."

Dr. Marcet of London, has drawn the same conclusions from a number of experiments instituted for the same purpose, in 1807. *Phil. Jour.*

Aërolites.

On the 3d of September, 1808, a number of stones fell from the atmosphere, near Lissa, a small town four miles N. W. of Prague, preceded by several loud explosions. One hundred parts of this Aërolite, analysed by Mr. Reuss, afforded of

Iron	29.	parts.
Nickel	0.50	
Manganese	0.25	
Silex	43.	

Magnesia	22.
Alumina	1.25
Lime	0.50
Sulphur and loss . .	3.50
	100.00

Philosoph. Journal.

Swiétenia Febrifuga.

DR. ROXBURGH gives the following notice of this plant, in a letter to Dr. C. Taylor, re-published in Nicholson's Journal, from the Trans. of the Soc. of Arts.

"It is a large timber tree, a native of the various mountainous parts of India. The bark possesses an agreeable odour, and from numerous experiments which I have made with fresh bark, I have drawn the following conclusions.

1. That the active parts of the bark of the Swiétenia Febrifuga are much more soluble than those of Peruvian bark, particularly in watery menstruums.

2. That it contains a much larger proportion of active, bitter, and astringent power, than Peruvian bark.

3. That the watery preparations of this bark remain good much longer than similar preparations of Peruvian bark.

4. That the spirituous and watery preparations bear to be mixed in any proportion without decomposition.

5. That this bark in powder, and its preparations, are more antiseptic than Peruvian bark or similar preparations thereof."

Carbonate of Magnesia.

It is with great pleasure we announce to the public that the manufacture of this article, on an extensive scale, has been commenced in this state, by Mr. William Dunn, apothecary and chemist, in this town. We have received the following accounts of the works from this gentleman which we hasten to publish.

"Our apparatus is connected with an extensive salt-work. In the autumn the water is pumped into the cisterns, and during the winter season, particularly after a very cold night, the sulphate of soda is precipitated and is raked out. The muriate of soda begins to crystallize about April and during mid-summer, when

it is nearly separated, a compound salt, which contains muriatic acid, and is probably a muriate of soda and magnesia, is precipitated. This salt is very soluble, and if it be not raked from the cisterns as it forms, it spoils all the salts made afterwards. After this is taken out, a small quantity more of muriate of soda is formed; the remaining water, which has an oily appearance, is heavy, and possesses a very acrid taste, is that from which we make our magnesia, the product being about 5 or 6 ounces of the latter from one gallon of the former. The apparatus is in a building 55 feet square, containing 7 cisterns of the capacity of from 3 to 500 gallons each, 4 ovens with cast iron [illegible] and a large number of strainers, &c. &c. I calculate to make about 30,000 pounds a year, sufficient to supply our continent, and any other demand which may be made. It is also my intention to manufacture the carbonate of soda to any amount which may be required, and I am now erecting an apparatus for that purpose. We employ from 4 to 6 persons in the magnesian factory. The magnesia, when first formed, is very pure, it can hardly be called a sub-carbonate, but by exposure to the air it attracts carbonic acid, and has then all the appearance of the carbonate of magnesia of the shops. With our apparatus we have fixed kettles for burning it to form the pure magnesian earth. At some future time, when more at leisure, I will give you an analysis of the compound salt, with a more particular account of our operations."

Mr. Dunn informs us, he has sent a schedule of the apparatus, and sample of the magnesia to the Secretary of State, for a patent. We have seen specimens of the magnesia from this manufactory, and it appears to be equally as pure as that imported. At present it is more compact, and of course somewhat heavier than the English; but the cause of this density has been discovered and in future it will be obviated.

Green Vitriol.

Extensive works for the manufacture of this salt have been erected within two or three years at Thetford, Vermont. The ore, which is a sulphuret of iron, is found in abundance in a de-

composed state. Several tons of excellent copperas have already been made, and it is supposed, the works will yield, the ensuing year, from 2 to 300 tons of this valuable article. Attempts are also about to be made at Winthrop, in the District of Maine, to manufacture this salt from an aluminous schistus, containing a considerable quantity of sulphuret of iron, in a partly decomposed state.

A labouring man near Plymouth had long been afflicted with hydrocele of the Tunica vaginalis, for which no remedy had been applied, and the tumour was of a large size. While he was standing near a vicious horse, the animal being irritated, seized the patient by the scrotum with his teeth, in such manner as to penetrate both the integuments and vaginal coat, by which the contents were immediately evacuated. A severe inflammation ensued, and a radical cure was the happy result.

The following gentlemen were examined and licensed as practitioners of medicine at the February meeting of the Censors of the Massachusetts Medical Society :—Ephraim Buck of Woburn; Paul L. Nichols of Freeport; Usher Parsons of Alfred, and Silas West of Tisbury.

Royal Society.

Nov. 28, and Dec. 5.—The conclusion of Mr. Brande's researches on the blood was read. The result of the author's experiments is, that very little iron exists in the blood; that the quantity is so small as to render it very improbable that the colour of that fluid depends on it; and that its influence is much less than has been supposed.

Dec. 19.—The first part of a paper by Dr. Herschell on the Comet, was read. Dr. H. noticed something like a distinct luminous body about the centre of the nucleus, which changed its relative position, sometimes appearing nearer, at others further, from the side next the sun; and differing, under these circumstances, very much in brilliancy. From these facts he was led

to infer, that the comet enveloped a real planetary body; and after a series of observations, on the 16th of October, when the comet was 114 millions of miles from the earth, he ascertained that this body was 428 miles in diameter, and surrounded with a cometic atmosphere. For this purpose he viewed it with seven, ten, and twenty feet telescopes, containing magnifiers of various powers, from 40 to 600 times.

Jan. 9th, and 16th.—The conclusion of Dr. Herchell's paper on the late comet, entered into a very minute investigation of the nature and extent of the luminous matter which surrounded it at some distance from the planetary body in its centre. This matter the doctor supposes to be of a phosphoric nature. The length of the tail he estimates to be, at the end of October, about 100 millions of miles; but to be very variable in length and breadth, and a hollow cone, emitting light on all sides. The inner side he supposes may illumine the planetary body in a manner similar to that in which the ring does Saturn. From the great alterations which took place in the nature and dimensions of the tail, he is inclined to conjecture that comets may be formed of nebulæ; that those nebulæ undergo condensation in their approach to the sun, or to some of what are called the fixed stars; and that in process of time they may become regular planets. On contrasting the appearance of the late comet with that of 1807, he is inclined to suppose that of 1811 much younger than the former.

Jan. 23d.—Mr. Davy communicated a paper written by Mr. Campion, on the structure of the eye of man and birds, particularly in relation to that faculty which enables it to adjust its focus to the distance of the object. The author examines the different conjectures and theories which have been proposed to account for this circumstance, and explains how the eye can have perfect images of objects at very different distances. It has been generally agreed that the eye must have some contractile power; but the existence of any organ capable of such a function, has never been ascertained.

Mr. C. on examining the eye of an eagle, discovered the existence of a small muscle attached to the sclerotica, and capable of contracting the eye, in a manner equal to effect the ne-

cessary change in the focal distance. The same muscle he discovered in some other birds, and hence he inferred that something analogous exists in the human eye. He observes, that images pass before the eyes of maniacs as vividly and distinctly without any sensible objects, as they do over those of some persons from objects within the focal distance of their eyes.

Medical and Physical Journal of Feb. and March, 1812.

Imperial Institute.

In our history of the last year, in speaking of the researches on the action of the eight pair of nerves on respiration, we have attended to the important experiments by which M. Legallois, physician in Paris, has proved that very young animals are capable of living without breathing during a time, by so much the longer as they are nearer to the period of birth.

M. Legallois having caused very young animals to undergo other lesions, has obtained still more singular results, which have finished by conducting him to the resolution of a question debated by anatomists for near two centuries; that of *the influence of the nerves on the motions of the heart.*

Having decapitated some of these animals, he observed that their heads continued to give signs of life precisely during the same time for each age that animals of this age are capable of living without breathing; from which he concluded that these heads die only for want of the respiratory function.

It is known besides from the experiments of Fontana, that it is possible to prolong life in the decapitated trunk by blowing air into the lungs. The immediate principle of the life of the trunk is therefore in the trunk itself.

Now we know on the other hand, that the life of each part requires its immediate communication with the spinal marrow, by means of the nerves, and a free circulation of the blood in the portion of the medulla, which furnishes nerves to this part.

This being settled, we should suppose that the simple destruction of a portion of the spinal marrow ought to affect those parts only to which this medulla gives nerves; but it happened otherwise in the experiments of M. Legallois. The destruction

of a portion of the medulla quickly killed the whole body, and produced, of course, more effect than even decapitation.

M. Legallois, in examining attentively all the circumstances of this phenomenon perceived that this lesion soon enfeebled and arrested the circulation, that the arteries emptied themselves, &c. He concluded from it that it killed mediately, and by weakening the motions of the heart.

He verified this conjecture by experiments, whose success may seem yet more singular than the first phenomenon. By diminishing, by the ligature of arteries, or even by amputation, the number of parts which the heart must supply with blood, the power that remains is rendered adequate because fewer efforts are left it to make, and the lesion of the medulla is less quickly mortal; thus an animal whose head has been cut off, will afterwards perish less quickly by the lesion of the medulla than if the head had been left on; and as, at the end of some time a partial lesion of the medulla much diminishes the circulation in the parts to which the destroyed portion of the medulla gives nerves, the destruction of a portion of the medulla affords a facility of destroying another portion of it after some time, without causing death so quickly. Thus, when the head of an animal is cut off, it is more easy to destroy the cervical medulla without killing the rest of its trunk; and, when its cervical medulla is destroyed it is more easy to do this operation on its dorsal medulla; so that one might cause each layer of its body to live successively, if the heart and lungs could be transported thither, and, that the chest, which contains these organs, should long preserve its life without the concurrence of any of the other parts.

The general and direct result of this fine series of experiments, is that the motion of the heart depends on the whole of the spinal marrow, which exerts its influence on it through the medium of the great sympathetic nerve: and in this way we explain how the heart is affected by the passions, without immediately depending on the brain; and we succeed in submitting to the empire of the nerves the only one of the muscular organs in which the nervous action was subject to difficulties; finally, as the removal of the brain does not affect the mo-

tions of the heart, while that of the medulla destroys them, the opinion advanced for some years by great physiologists, that the brain is not the only source of the nervous action, but that each part of the nervous system takes also a part in this action, is fully confirmed.

Analyse des travaux de l'institut impérial, pendant l'année, 1811.

M. Chaussier, correspondent and professor of the faculty of medicine, has communicated a memoir on the dangerous disease called puerperal fever, or peritonitis. Physicians have thought it was produced by a milky effusion, because a serous fluid mixed with flakes like a caseous substance has been found in the abdomen. M. Chaussier has proved that these appearances are false: he cites examples of a similar disease, which attacks men and young girls; he shews that it is a catarrhal disease; he afterwards explains how the changes of constitution from pregnancy and parturition expose to it; and what is more important, he announces having obtained the most marked success from the employment of vapour baths and frictions of mercurial ointment on the abdomen. *Ib.*

The use of vapour baths as a local and general application is becoming very prevalent in England. It is said that "inveterate catarrhs, chronic rheumatism, contraction of the muscles, and stiff joints, yield to the influence of the vapour." Gout, calculi, and tooth-ache, are also cured by it. In the petechial fever of this country they have been undoubtedly beneficial; though applied in rather a coarse way. The common practice has been to immerse billets of wood in hot water for some time, and afterwards to place them in the patient's bed.

White Hellebore.

Mr. Moore's conjecture respecting the composition of the *Eau Medicinale d'Husson** is admitted as highly probable by the

* See Review in last number of this work, page 97.

learned editors of the Edinburgh Medical and Surgical Journal, while it is controverted in the London Medical Review. Since the publication of our last number we have seen both the Eau Medicinale d'Husson and the imitation (the compound wine of white hellebore and opium) employed in gout with most decided benefit. We are not prepared to insist on the identity of these two articles, but of the utility of the white hellebore in the gout we are fully satisfied. Uundoubtedly there are limits and conditions to be observed in its use, with which we are not yet acquainted. Some stomachs require that more than one quarter of the composition should consist of wine of opium; and some perhaps may not bear so much. But we shall not hesitate to employ this remedy in all cases, where we do not perceive any unusual debility, nor any peculiarity of constitution. We shall employ it because we would do as we would be done by; and in a disease so painful as the gout, and which is liable to be returning more and more frequently through life, we should for ourselves willingly take a little risk, where the chance of relief was so great, as it appears to be from the use of this medicine.

We have extended the use of the hellebore to rheumatism. No opportunity has occurred of trying it in the most acute rheumatism. In some old and obstinate cases of chronic rheumatism it failed to do good. But in others it afforded unequivocal benefit. We have thought it most useful in those cases which approached the most nearly to the acute rheumatism; but we require more experience before we can be confident in this respect.

The white hellebore is a medicine of great activity, and must be employed with great caution. But with caution, the use of it may be extended to other diseases. We have employed it in one case where the patient was obstinately comatose through several days. In one minute after it was taken, the patient, who knew not what it was, nor wherefore it was given, roused himself up, complaining of peculiar and distressing sensations, which extended to every fibre of his body. In this case the dose was fifty drops of the wine of white hellebore alone. The beneficial effects in keeping the patient awake continued several hours, though not constantly. Thirty drops were repeated af-

terwards with like beneficial effect, and the subsidence of the alarming symptom rendered the further repetition unnecessary. In this case the medicine did not cause any evacuations from the stomach, nor from the bowels. What was the previous state of the patient may be judged from this, that afterwards he had not any recollection of what passed for five days before it was exhibited.

It is of some consequence to ascertain what is the best mode of preparing this medicine for use. We shall be happy to receive any communications on this head.

The petechial or spotted fever, within the three last months, has invaded various towns of New Hampshire, Vermont, and the District of Maine. We do not learn that the character of the disease has changed. This is the seventh year of its appearance in the Northern States and Canada.

The epidemic of the season in Boston, is a catarrhal fever, affecting the mucous membrane of the nose, throat, and lungs. Children are most violently attacked;

The second volume of Transactions of the Medical and Chirurgical Society of London, like their first publication, contains many useful, novel, and interesting articles. We regret that our limits do not permit an abstract to be made of all these communications. A few of them will, we trust, be acceptable to our readers.

The first paper describes the cure of an *aneurism by anastomosis in the orbit*, by Benjamin Travers, Esq. In this case excision of the tumour, as recommended by Mr. J. Bell in aneurisms of this kind, was impracticable without great hazard, on account of the seat of the disease. The method adopted by Mr. Travers, was that of tying the trunk of the common carotid artery, by which the supply of blood to the tumour was interrupted, and a cure happily effected.

A case of *hydrocephalus internus* from Mr. William Cooke, was attended with an extensive scrophulous affection of the liver,

of the left kidney, and a premature developement of the external pudenda. Mr. C. states this to be the fourth case of hydrocephalus, which he has examined within twelve months, all of which were attended with *affections of the liver*.

A letter from Dr. Fenwick, of Durham, on the use of *oil of turpentine in tænia*, we presume from its date to have been the earliest communication on that subject, as it is anterior to those in the London Medical Transactions. The original use of this remedy seems to have been made by a sailor, in his own case. "He was induced to try it, by observing that whenever he drank rather freely of gin, he always passed portions of the worm, and experienced relief; which led him to hope, that if he could find some substance of the same nature as gin, but stronger, it might effectually cure him. Under this impression he took a wine glass full of Oleum Terebinthini. The consequence was, that about two hours afterwards he passed with a purgative stool an entire tape worm, from which time the complaint had not returned." A number of additional cases are detailed in this paper, where a speedy expulsion of the tænia was effected by a large dose of this remedy. Two ounces were commonly given, and another ounce superadded, if the first did not operate in two hours.* The largeness of the dose secures a quick operation on the bowels, and prevents those affections of the urinary passages which have attended the use of smaller doses.

A case of *wound of the Heart*, by J. Heatherton, Esq. In this case the patient was able to walk until his death, forty-nine hours after the accident, although the left ventricle of the heart was penetrated by a bayonet.

A case of recovery from the effects of *arsenic*, with remarks on a new mode of detecting the presence of this metal, by Dr. Roget. The quantity of arsenic swallowed was sixty grains. The test, which is the discovery of Dr. Marcet, is as follows: "Let the fluid suspected to contain arsenic be filtered: let the end of a glass rod, wetted with a solution of pure ammonia, be brought into contact with this fluid; and let a clean rod simi-

* We have tried this remedy in doses of half an ounce with success in removing both tænia and lumbrici. Larger doses are preferable, from the greater certainty of their operation on the bowels. Ed.

larly wetted with a solution of nitrate of silver, be brought into contact with the mixture. If the minutest quantity of arsenic be present, a precipitate of a bright yellow colour, inclining to orange, will appear at the point of contact, and will subside to the bottom of the vessel." This precipitate was formed in a solution containing only one 25. and even one 50,000th part of a grain of arsenic.

Account of a *singular and fatal disease* occurring in several persons in the same hamlet, by Mr. H. Gervis. This account contains five cases, four of which proved fatal; 2 within 24 hours from the attack, and 2 within 13 hours. The symptoms, which varied in the different individuals, were pain in the head; sore throat; pain in the feet; in some, shivering followed by heat; in others the heat natural; nausea, and vomiting; thirst in some, in others none; stiffness of limbs; pulse weak, from 80 to 100; tongue moist and clean. Before death the pupils were dilated; the tunica albuginea in some, suffused with blood, in others, of the natural appearance; some lost their sight and were insensible, others were sensible to the last; pulsation indistinct or imperceptible; large irregular purple spots appeared in two cases, on the neck and breast near the time of death.*

* It is impossible to read the account of these cases without perceiving the similarity of the disease to what is here called the spotted fever.

(To be continued.)

The medical public will learn, with extreme regret, the death of Dr. Edward Miller, editor of the New York Repository. He was affected, for some time, with a catarrh, which suddenly assumed a typhoid character, attended with delirium and extraordinary prostration of strength. After these appearances he soon expired. We regret our inability, at present, to pay a just tribute of respect to the character and exertions of this excellent and most valuable man; but, in truth, all that could be said would very feebly express our sentiment of his merit, and of the loss his death occasions to the profession and the public.

LIST OF BOOKS

Which the Massachusetts Medical Society require *to be studied by Candidates for examination.*

Anatomy.—Edinburgh System of Anatomy, or Bell's Anatomy.

Physiology.—Haller's Physiology; Boerhaave's Institutes.

Chemistry.—Chaptal's Chemistry, or Henry's Chemistry.

Materia Medica and Pharmacy.—Pharmacopœia of the Massachusetts Medical Society; Thatcher's Dispensatory; Lewis's or Murray's Materia Medica.

Surgery.—Cooper's Surgery; Bell's (Benj.) System of Surgery; Desault or Boyer on Diseases of the Bones; Hunter (John) on Lues Venerea.

Midwifery.—Burns's Anatomy of the Gravid Uterus; Denman's or Smellie's Midwifery.

Pathology and Therapeutics.—Cullen's Nosology; do. First Lines; Thomas's Practice of Physic; Sydenham's Works; Saunders on the Liver; Curry on Water; Rush's Works; Underwood on Diseases of Children.

Books recommended for the perusal of Students in Medicine.

Anatomy.—Albinus' Anatomical Plates; Cheselden's Anatomy; Charles Bell's System of Dissections; London Dissector; Winslow's Anatomy.

Physiology.—Blumenbach's Physiology; Bichât's Researches on Life and Death; Richerand's Physiology; Cullen's Physiology; Flemyng's Physiology; Fordyce on Digestion; Hunter on the Animal Economy; Hewson on the Blood and Lymphaticks; Hartley's Observations on Man; Herdman on Animal Life; Sheldon on the Absorbent System; Saumarez' Physiology.

Midwifery.—Burns on Uterine Hœmorrhage; Baudeloque's Midwifery; Rigby on Uterine Hœrmorrhage; White on Lying-in Women.

Pathology and Therapeutics.—Adams on Morbid Poisons, 4to. edition; Alibert on Fevers, by Caldwell; Baillie's Morbid Anatomy; Blane on Diseases of Seamen; Brown's Elements of Medicine; Brown's Observations on Darwin's Zoonomia; Bree on Disordered Respiration; Burserius' Institutes; Cabanis on the Revolutions of Medicine; Celsi Opera; Chisholm on Pestilential Fevers; Clark on Diseases of hot climates; Clark on Fevers and Scarlatina; Cleghorn on Diseases of Minorca; Cogan on the Passions; Currie on the Diseases of America; Falconer on the Passions;

Ferriar's Medical Histories and Reflections; Fordyce's (Geo.) Dissertation on Fever; Gaubii Institutiones Pathologicæ; Gregory's Conspectus Medicinæ Theoreticæ; Hamilton on Purgative Medicines; Haslam on Insanity; Haygarth on Fevers; Heberden's Commentaries; Hillary on Diseases of Barbadoes; Hoffman's Works; Home's (F.) Clinical Experiments; Hufeland on Long Life; Huxham on Fevers and Sore Throat; Johnstone, Fothergill, and Withering on Sore Throat; Kirkland on Apoplectick and Paralytick affections; Kirkland's Medical Surgery; Le Roy's Prognosticks; M'Bride's Introduction to the Practice of Physic; Medical Observations and Inquiries; Morgagni on the Causes and Seats of Diseases; Mosely on Tropical Diseases; Pemberton on the Abdominal Viscera; Percival's Medical Essays; Percival's Medical Ethicks; Pinel on Insanity; Pringle on the Diseases of the Army; Sauvage's Nosologia; Trotter's Medicina Nautica; Whytt's Works; Willan on Cow Pox; Willan on Cutaneous Diseases; Wilson on Fever; Zimmerman on Experience in Physic.

Chemistry.—Accum's Chemistry; Fourcroy's Chemistry; Lavoisier's Elements of Chemistry; Murray's System of Chemistry; Thompson's System of Chemistry.

Materia Medica and Pharmacy.—Alston's Materia Medica; Crumpe on Opium; Murray's Apparatus Medicaminum; Pearson's Materia Medica; Thesaurus Medicaminum.

Surgery.—Abernethy's Surgical Observations; Bell (Benj.) on Ulcers, do. do. on Lues Venerea; Bell's (John) Principles of Surgery; Bell's (Charles) Operative Surgery; Cooper (Astley) on Hernia; Cooper's Surgical Dictionary, by Dorsey; Crowther on White Swellings; Hey's Practical Observations in Surgery; Home on Strictures of the Urethra; Hunter (John) on the Blood, and Gun shot Wounds; Jones on Hœmorrhage; Pott's Works, by Earle; Scarpa on the Eye; Ware on the Diseases of the Eye.

RECENT BRITISH PUBLICATIONS.

Practical Observations on the treatment of the diseases of the Prostate Gland. By Everard Home, Esq. F. R. S.

Medico-Chirurgical Transactions; published by the Medical and Chirurgical Society of London. Vol. 2d. 8vo.

Bionomia. Opinions concerning Life and Health, introductory to a course of lectures on the Physiology of Sentient Beings. By A. P. Buchan, M. D. &c.

Dissertation on the Bite of a Rabid Animal. Being the substance of an Essay which received a prize from the Royal College of Surgeons in London. 1811.

Observations on the Surgical Anatomy of the Head and Neck, illustrated by Engravings. By Allan Burns, Mem. R. Coll. Sur. London.

An Inquiry into the Process of Nature in repairing injuries of the Intestines, illustrating the treatment of penetrating wounds and strangulated Hernia. By Benjamin Travers.

A Treatise on the Management of Infants, &c. &c. By John Syer, Esq.

Observations on the Use of Caustic Alkali in Scrophula and other Chronic Diseases.

Morbid Anatomy of the Human Gullet, Stomach, and Intestines. Illustrated with 21 engravings. By Dr. Alexander Monro, jun.

Essay on the probability of Sensation in Vegetables, &c. &c. By James P. Tupper.

A Treatise on some Practical Points relating to Diseases of the Eye. By the late John C. Saunders. With an account of his Life, &c. By J. R. Farre, M. D.

An Essay on the disease called Yellow Fever, with Observations concerning Febrile Contagion, Typhus Fever, Dissentery, and the Plague, &c. &c. By Edward Nathaniel Bancroft, M. D.

Mr. Davy has in the press a first volume of Elements of the Philosophy of Chemistry.

Practical Remarks on Insanity, to which is added a Commentary on the Dissection of the Brains of Maniacs, &c. By Brian Crowther, Surgeon, &c. 8vo.

Observations on Apoplexy. By Dr. Cheyne, of Dublin. 8vo.

An Experimental Inquiry into the Use of the Ligature. By John Webb Surgeon. 8vo.

RECENT AMERICAN PUBLICATIONS.

The general Repository and Review, to be continued quarterly, Nos. I. and II. containing 474 pages. Cambridge ; Hilliard, 1812.

A Treatise on Bridge Architecture, in which the superior advantages of the Flying Pendant Lever Bridge are fully proved ; with an historical account and description of different bridges erected in different parts of the world, from an early period down to the present time. By Thomas Pope, Architect, &c. New York ; Niven. 8vo.

Communications of the Medical Society of Connecticut. Vol. I. No. 1. New Haven. 8vo.

American Ornithology, or the Natural History of the Birds of the United States ; illustrated with Plates engraved and coloured from original drawings, taken from nature. By Alexander Wilson. The 4th Vol. 4to.

Two Lectures on Comets, by Professor Winthrop, also an Essay on Comets, by A. Oliver, jun. Esq. with Sketches of the Lives of Professor Winthrop and Mr. Oliver. Likewise a Supplement, relative to the present Comet of 1811. Boston ; T. B. Wait and Co. 12mo.

Anniversary Address to the Medical Society of the State of New York, by the President, Dr. Romayne.

Dissertation on the Use and Abuse of Tobacco, wherein the advantages and disadvantages attending the consumption of that entertaining weed, are particularly considered. Humbly addressed to all Tobacco Consumers, but especially those among Religious People. Second American edition. By Adam Clarke, L.L.D. Newburyport; Thomas and Whipple. 12mo.

Bell's Operative Surgery is in press. Hale and Hosmer, Hartford, Con.

TO CORRESPONDENTS.

The Editors much regret that the limits of this Journal preclude the publication of a valuable treatise, communicated by a correspondent in the District of Maine. Bills of mortality for Boston, Providence and Plymouth, and reviews of the communications of the Connecticut Medical Society, and of Dr. Moore's dissertation on the Oxide of Bismuth are unexpectedly and inevitably omitted. Communications on the preparations of mercurial ointment, and on the use of the carbonate of iron in cancer, were received too late for insertion in this number. The quantity of original matter which has presented, has hitherto prevented the execution of the plan of this work, so far as regards the selection of interesting articles from the Journals of Europe. This will not be relinquished, as very ample materials are prepared for carrying it into effect.

REFERENCES TO PLATE FIRST.

Page. 122.

Figure 1. Right auricle of the heart.
2. Left auricle.
3. Right ventricle.
4. Left ventricle.
5. Vena Cava superior.
6. Pulmonary artery.
7. Aorta.
8. Arteria innominata, with the right Carotid and Subclavian arteries springing from it.
9. Left Carotid artery.
10. Left Subclavian artery.
11. Anterior Coronary artery and vein.
12. Aneurismal tumour.
13. Rupture in the tumour, where it adhered to the Sternum and Ribs.

METEOROLOGICAL JOURNAL.

BY JOHN GORHAM, M.D. BOSTON.

FOR JANUARY, 1812.

Day of	Thermometer. 7 A. M.	3 P. M.	10 P. M.	Barometer. 3 P. M	Wind. 7 A. M.	10 P. M.	Weather Day.	Night.
1	35.°	41.°	36.°	29.30	E.	S.	Rain.	Cloudy.
2	36.	32.	28.	29.17	N.W.	N.W.	Snow.	Snow.
3	28.	32.	27.	29.27	N.W.	N.W.	Ditto.	Cloudy.
4	27.	32.	36.	29.17	N.W.	N.W.	Cloudy.	Ditto.
5	31.	37.	32.	29.35	W.	W.	Fair.	Fair.
6	30.	41.	35.	29.57	W.	W.	Ditto.	Ditto.
7	28.	36.	26.	29.60	W.	W.	Ditto.	Ditto.
8	30.	35.	25.	29.50	W.	W.	Ditto.	Ditto.
9	24.	24.	16.	29.60	N.W.	N.W.	Ditto.	Ditto.
10	18.	26.5	21.	29.94	W.	N.W.	Ditto.	Ditto.
11	19.	26.	10.	29.87	N.W	N.W.	Ditto.	Ditto.
12	17.	24.	20.	29.50	N.W.	N.W.	Snow.	Ditto.
13	21.	29.	21.	29.27	W.	N.W.	Ditto.	Ditto.
14	17.	32.	40.	30.05	W.	S.	Cloudy.	Cloudy.
15	39.	33.5	19.	29.58	N.W.	N.W.	Ditto.	Ditto.
16	9.	11.	5.	29.86	N.	N.W.	Ditto.	Fair.
17	4.	14.	8.	29.80	N.	N.W.	Snow.	Ditto.
18	-*4.	1.	-6.	30.15	N.W.	N.W.	Fair.	Ditto.
19	0.	6.	8.	29.90	N.	N.	Snow.	Snow.
20	25.	13.	10.	29.46	E.	N.	Ditto.	Cloudy.
21	4.	7.	1.	29.46	W.	N.W.	Fair.	Fair.
22	-5.	7.	-1.	30.24	N.W.	N.W.	Ditto.	Ditto.
23	19.	30.	23.	30.	W.	S.W.	Cloudy.	Cloudy.
24	24.	20.	18.5	29.95	N.	N.	Snow.	Hail.
25	23.	33.	30.	29 60	N.W.	W.	Fair.	Foggy.
26	36.	44.	36.	29.70	W.	W.	Cloudy.	Cloudy.
27	36.	38.	30.	29.83	N.W.	N.W.	Ditto.	Ditto.
28	21.	30.	27.	30.30	N.W.	N.W.	Ditto.	Ditto.
29	17.	30.	32.	30.43	N.	S.E.	Ditto.	Rain.
30	33.	34.	34.	29.58	N.	N.	Rain.	Foggy.
31	35.	38.	31.	29.46	W.	W.	Fair.	Fair.

Quantity of rain, 1.50 inches.
Quantity of Snow, 7 inches.
Mean temperature, 21°.25.
Mean pressure of the air, 29.80.

* The numbers to which the horizontal mark is prefixed denote degrees below 0.

METEOROLOGICAL JOURNAL.

FOR FEBRUARY 1812.

Day of	Thermometer. 7 A. M.	Thermometer. 3 P. M.	Thermometer. 10 P. M.	Barometer. 3 P. M.	Wind. 7 A. M.	Wind. 10 P. M.	Weather. Day.	Weather. Night.
1	29.°	37.°	27.°	30.10	W.	W.	Fair.	Fair.
2	25.	41.	40.	29.50	S. W.	S. W.	Ditto.	Cloudy.
3	37.	44.	42.	29.35	S. W.	S.E.	Cloudy.	Rain.
4	39.	34.	29.	29.30	W.	W.	Fair.	Fair.
5	33.	41.	27.	29.65	S. W.	N.W.	Cloudy.	Ditto.
6	10.	16.	14.	30.	N.W.	N.W.	Fair.	Ditto.
7	30.	43.	38.	29.50	S. W.	S.	Ditto.	Rain.
8	41.	49.	43.	29.29	S. E.	S. W.	Rain.	Ditto.
9	37.	33.	27.	29.87	W.	N.W.	Fair.	Fair.
10	25.	38.	33.	30.07	N.W.	S.E.	Ditto.	Cloudy.
11	32.	27.	24.	29.90	E.	N.	Snow.	Ditto.
12	12.	15.	8.	30.06	N.W.	N.W.	Fair.	Fair.
13	9.	28.	18.	30.	N.W.	N.W.	Ditto.	Ditto.
14	22.	39.	42.	30.10	S.	S.	Rain.	Rain.
15	41.	44.	30.	30.	W.	N.W.	Fair.	Fair.
16	19.	24.	24.	30.02	N.	E.	Cloudy.	Snow.
17	21.	22.	22.	30.05	N.E.	N.	Snow.	Cloudy.
18	26.	35.	31.	29.90	N	W.	Cloudy.	Ditto.
19	21.	34.	23.	30.05	N.W.	N.W.	Fair.	Fair.
20	19.	32.	12.	30.12	N.W.	N.W.	Ditto.	Ditto.
21	8.	23.	21.	30.27	N.W.	E.	Ditto.	Cloudy.
22	23.	31.	23.	30.24	W.	W.	Ditto.	Fair.
23	26.	28.	32.	30.19	N.	S.E.	Snow.	Hail.
24	14.	23.	11.	29.95	N.	N.W.	Fair.	Cloudy.
25	8.	26.	26.	30.30	N.	S.E.	Snow.	Snow.
26	29.5	36.	10.	29.60	E.	N.W.	Ditto.	Fair.
27	4.	16.	13.	29.66	N.W.	N.W.	Fair.	Snow.
28	19.	27.	24.	29.70	N.W.	E	Ditto.	Ditto.
29	26.	17.	13.	29.95	E.	N.W.	Snow.	Cloudy.

Mean temperature, 27°.5.

Mean altitude of the barometer, 29.79.

Quantity of rain 2.82 inches.

Quantity of snow, 17 inches.

METEOROLOGICAL JOURNAL,

FOR MARCH, 1812.

Day of	Thermometer.			Barometer.	Wind.*			Weather.	
	7 A. M.	3 P. M.	10 P. M.	3 P. M	7 A. M.	1 P. M.	10 P. M.	Day.	Night.
1	12.°	21.°	11.°	30.05	N.W.	N.W.	N W.	Fair.	Fair.
2	8.	23.	11.	30.20	W.	W.	W.	Ditto.	Ditto.
3	15.	26.	12.	30.15	N.W.	N.	N.W.	Ditto.	Ditto.
4	9.	30.	30.	30.04	N.W.	W.	W.	Ditto.	Ditto.
5	30.	46.	35.	29.94	W.	W.	W.	Ditto.	Ditto.
6	40.	36.	28.	29.85	W.	N.W.	N.W.	Ditto.	Ditto.
7	22.	32.	23.	29.97	N.	N.W.	N.W.	Ditto.	Ditto.
8	26.	31.	25.	30.05	N.	N.E.	E.	Cloudy.	Snow.
9	27.	36.	26.	30 15	N.	W.	N.W.	Fair.	Fair.
10	25.	36.	27.	30.06	N.W.	W.	W.	Ditto.	Cloudy.
11	37.	44.	41.	29.70	W.	W.	W.	Ditto.	Fair.
12	32.	35.	25.	29.85	N.W.	N.W.	N.W.	Ditto.	Ditto.
13	17.	31.	22.	29.97	N.W.	N.W.	N.W.	Ditto.	Ditto.
14	20.	29.	25.	30.15	N.	W.	W.	Cloudy.	Cloudy.
15	30.	30.	32.	30.20	E.	E.	S.E.	Ditto.	Ditto.
16	32.	36.	34.	29.97	E.	N.E.	E.	Rain.	Rain.
17	34.	39.	34.	29.90	N.E.	E.	N.W.	Ditto.	Fair.
18	26.	30.	21.	30.10	N.W.	N.W.	N.W.	Fair.	Ditto.
19	28.	32.	30.	30.11	N.W.	N.W.	N.W.	Ditto.	Cloudy.
20	27.	40.	34.	30.13	N.W.	E.	S.E.	Cloudy.	Ditto.
21	34.	39.	35.	30.15	E.	E.	N.E.	Ditto.	Ditto.
22	34.	43.	36.	30.20	N.	E.	E.	Fair.	Ditto.
23	35.	40.	34.	30.18	E.	E.	E.	Ditto.	Fair.
24	34.	39.	33.	30.07	N.E.	N.E.	N.E.	Ditto.	Ditto.
25	32.	40.	32.	30.	N.E.	E.	W.	Ditto.	Cloudy.
26	40.	48.	40.	29.70	W.	W.	W.	Cloudy.	Fair.
27	42.	47.	40.	29 72	W.	E.	E.	Fair.	Cloudy.
28	38.	39.	37.	29.65	E.	E.	E.	Rain.	Rain.
29	37.	37.	34.	29.69	E.	N.E.	N.E.	Ditto.	Sleet.
30	32.	37.	33.	29.95	N.	N.	N.W.	Snow.	Fair.
31	30.	40.	31.	30.10	N.	NE.	N.	Fair.	Ditto.

Mean temperature, 29°.75.

Mean atmospheric pressure, 29.92.

Quantity of rain, 1.20 inches.

Quantity of snow, 2 inches.

* As the season is approaching when we are to expect the usual easterly winds, a third observation is added, to ascertain the proportion of days in which they prevail during the vernal months.

THE

NEW ENGLAND JOURNAL

OF

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A CONCISE VIEW OF THE RESULTS OF DR. DAVY'S LATE ELECTRO-CHEMICAL RESEARCHES.

(Continued from page 138.)

*EXPERIMENTS ON THE DECOMPOSITION AND COMPOSITION OF THE BORACIC ACID.

The merit of having discovered the nature of the boracic acid, which hitherto had been regarded as a simple substance, must be shared between Dr. Davy, and Messrs. Gay Lussac and Thenard ; for it appears, that although unacquainted with the experiments of each other, the same modes of investigation were pursued and the same results were attained by the former in London, as those which rewarded the labours of the latter in Paris. In detailing therefore the results of Dr. Davy's discoveries, we shall at the same time do justice to those of the distinguished French chemists.

He first attempted the decomposition of this acid by subjecting it to the action of an extensive voltaic battery, and partially

* Nich[illegible]'s Journal, vol. 24. p. 12.

succeeded; but the decomposition of potass having furnished him with a powerful agent in effecting chemical decompositions, the experiments by which its precise nature was ascertained were completed by the use of potassium.

He found, "that when equal weights of potassium and boracic acid were heated together in a green glass tube, which had been exhausted after having been twice filled with hydrogen, there was the most intense ignition before the temperature was nearly raised to the red heat; the potassium entered into vivid inflammation, where it was in contact with the boracic acid."

Dr. Davy employed tubes formed of various substances, to collect the products of this action. In all cases the acid was decomposed, and the products were scarcely different.

The mass resulting from the action of potassium after washing, appears pulverulent and of the darkest shades of olive. It is opake, very friable, and its powder does not scratch glass.

If heated in the atmosphere, it takes fire at a temperature below the boiling point of olive oil, and burns with a red light and with scintillations like charcoal.

When gently heated by means of a spirit lamp in a retort filled with oxygen gas, it throws off most vivid scintillations, like those from the combustion of the bark of charcoal, and the mass burns with a brilliant light. A sublimate rises, which is boracic acid, and it becomes coated with a vitreous substance, which proves likewise to be boracic acid.

At common temperatures it inflames spontaneously in oxymuriatic acid gas, burns with a brilliant white light, a white substance coats the surface of the vessel, and the peculiar substance is found covered by a white film, which, by washing, affords boracid acid, and leaves a black matter, not spontaneously inflammable in a fresh portion of the gas, but which inflames in it by a gentle heat, and produces boracic acid.

No essential changes are produced by heating it with hydrogen or nitrogen.

It renders nitric acid of a bright red, and when heated is rapidly dissolved, with considerable effervescence, nitrous gas is evolved, and the fluid affords boracic acid.

When heated in sulphuric acid, it produces a slight efferves-cence, a deep brown solution is formed, and potash throws down a black precipitate.

It tinges muriatic acid a faint green.

It exerts no perceptible action on acetic acid.

It combines with the fixed alkalis both by fusion and solution, and forms pale olive coloured compounds, affording dark precipitates with muriatic acid.

When long heated in contact with sulphur, it dissolves, and the sulphur acquires an olive tail.

It exerts less action on phosphorus, and none on mercury.

" These circumstances are sufficient to show that the combustible substance obtained from boracic acid by the agency of potassium is different from any other known species of matter; and it seems, so far as the evidence extends, to be the same as that procured from it by electricity; and the two series of facts seem fully to establish the decomposition and recomposition of the acid."

Dr. Davy attempted to ascertain the proportion of base and of oxygen in this acid, and in one experiment he fixes it at one of the former to two of the latter; in a second, at one of the inflammable substance to 1.8 of oxygen. These quantities however are considered only as approximations to the real composition of the boracic acid.

Dr. Davy observes, that there are many circumstances which favour the idea that the dark olive coloured substance is not a simple body; its being non-conducting, its change of colour on being heated with hydrogen gas, and its power of combining with the alkalis; for these properties in general belong to primary compounds, that are known to contain oxygen.

To ascertain this point, he " covered a small globule of potassium with four or five times its weight of the olive coloured matter, and heated the mixture to whiteness in a tube of platina exhausted, after having been filled with hydrogen. Its colour was of a dense black, and its lustre scarcely inferior to plumbago. It was a conductor of electricity." It effervesced with water, and a dark olive matter separated.

"Some of the olive coloured matter with a little potassium was heated to whiteness, covered with iron filings, a dark metalline mass was formed, which conducted electricity."

The substance which enters into alloy with potassium and iron, he is inclined to consider as the true basis of boracic acid.

From the colour of these oxides, says Dr. Davy, and their solubility in the alkalis, from their general powers of combination, and from the conducting nature and lustre of the matter produced by the action of a small quantity of potassium on the olive coloured substance, and from all analogy, there is strong reason to consider the boracic basis as metallic in its nature; and I venture to propose for it the name of *boracium.*"

The conclusions of the French chemists M. M. Gay Lussac and Thenard, respecting the nature of the basis, are somewhat different. They regard it as analogous to sulphur and phosphorus, and have given it the name of *bore.*

ANALYTICAL INQUIRIES RESPECTING FLUORIC ACID.

When fluoric acid gas, which has been procured in contact with glass, is introduced into a plate glass retort, exhausted after being filled with hydrogen gas, and containing potassium, white fumes are immediately perceived, which become more copious when the vessel is gently heated. If the temperature be still farther augmented, the metal takes fire, burns with a brilliant red light, the whole or a part of the fluoric acid gas disappears, and there remains at the bottom of the retort a mass of a chocolate colour; a sublimate, in some parts chocolate and in others yellow, is found round the sides and at the top of the retort.

When ten grains and a half of potassium were used, Dr. Davy found that about fourteen cubical inches of fluoric acid gas disappeared, and about two and a quarter of hydrogen gas were evolved. When the product was examined by a magnifier, it evidently appeared consisting of different kinds of matter; a blackish substance, a white, apparently saline substance, and a substance having different shades of brown and fawn colour.

The mass did not conduct electricity. It effervesced violently with water, and a gas was evolved whose smell resembled, in some degree, the odour of phosphuretted hydrogen, and was inflammable. Exposed to heat and atmospheric air, it burnt slowly, lost its brown colour, and became a white saline mass. When heated to redness in oxygen gas, it burnt with difficulty, and gave out a light similar to that produced by the combustion of liver of sulphur. The water which had acted upon a portion of this matter had a number of chocolate coloured particles floating in it, and when these were separated, the remaining fluid was found to contain fluate of potash, and potash.

The solid residuum on the filtre heated in a small glass retort, burnt and became white, oxygen was absorbed, and acid matter produced.—Operating on so small a scale, I have not (says Dr. D.) been able to gain fully decided evidence that the inflammable part of it is the pure basis of the fluoric acid; but with respect to the decomposition of this body by potassium, and the existence of its basis at least combined with a smaller proportion of oxygen in the solid product, it is scarcely possible to entertain a doubt.

As silex was always obtained during the combustion of the chocolate coloured mass, he thought it might be a product of the operation, and that this substance was a compound of the siliceous and fluoric bases in a low state of oxygenation with potash; experiments were made, to obtain the basis of the fluoric acid free from this earth, by heating together one part of dry boracic acid with two of fluate of lime. "The product was in some parts black, in others brown. It did not effervesce with water, and when lixiviated afforded a dark brown combustible mass, which did not conduct electricity, and which, when burnt in oxygen gas, afforded boracic and fluoric acids. It dissolved with violent effervescence in nitric acid, but did not inflame spontaneously in oxy-muriatic acid."

"I am inclined to consider it as a compound of the olive-coloured oxide of boracium, and an oxide of the fluoric basis."

ANALYTICAL EXPERIMENTS ON MURIATIC ACID.

It is well known to those who have been engaged in chemical pursuits, that much attention has been devoted to the investigation of the nature of the muriatic acid, and that hopes were entertained of decomposing it and demonstrating its composition by the action of voltaic electricity. These hopes, however, have not been realized. In all instances in which this acid has been subjected to the action of this energetic principle, it has been found that the gaseous products obtained, resulted altogether from the decomposition of the water with which it was combined. From the uniform result of these experiments, Dr. Davy attempted its decomposition by potassium.

"When potassium is introduced into muriatic acid gas, it immediately becomes covered with a white crust, it heats spontaneously, and by the assistance of a lamp acquires in some parts the temperature of ignition, but does not inflame. When the potassium and the gas are in proper proportions, they both entirely disappear; a white salt is formed and a quantity of pure hydrogen gas evolved, which equals about one third of the original volume of the gas."

The muriatic acid, after this experiment, is capable of forming as large a proportion of muriate of silver as before; hence Dr. Davy attributes the phenomena to the decomposition of the water, which he supposes to amount to at least one third of the weight of the acid in its æriform state.

The next object of this chemist was to procure the muriatic acid in a perfectly dry state, and a variety of experiments was instituted for this purpose, but without success, as the acid was always found in a combined form with the substances with which it was distilled, producing in general triple compounds. The effect of potassium on these compounds, for example, the fluids which had distilled over during the action of phosphorus and muriate of mercury and of sulphur and oxy-muriatic acid, was equally unexpected and powerful. From even small quantities, rapid inflammations and violent explosions were produced, and there is much reason for supposing, (says Dr. Davy) that in these phenomena, the muriatic acid cannot be entirely passive;

and it does not seem unfair to infer, that the transfer of its oxygen, and the production of a novel substance, are connected with such effects.

The Bakerian lecture Dr. Davy concludes by observing that, "In proportion as progress is made towards the knowledge of pure combustible bases, so in proportion is the number of metallic substances increased; and it is probable that sulphur and phosphorus, could they be perfectly deprived of oxygen, would belong to this class of bodies."

"As our inquiries at present stand, the great general division of natural bodies is into matter which is, or may be supposed to be, metallic and oxygen; but till the problem concerning the nature of nitrogen is fully solved, all systematic arrangements made upon this idea must be regarded as premature."

ANALYTICAL EXPERIMENTS ON MURIATIC AND OXY-MURIATIC ACIDS.*

We shall pass over the observations and experiments detailed in the appendix to the Bakerian lecture for 1808, on ammonia, sulphur, phosphorus, and muriatic acid, as they admit of no positive conclusions, and cannot be easily condensed; and proceed to give a concise view of the important facts respecting the nature of muriatic and oxy-muriatic acids announced in a paper read to the members of the Royal Institution in 1810.

After adverting to the opinion of the distinguished Swedish chemist, Mr. Scheele, that oxy-muriatic acid is merely muriatic acid freed from hydrogen, and that muriatic acid is a compound of hydrogen and oxy-muriatic acid; after stating the theory of Berthollet, which has received the support of a great majority of chemists, that oxy-muriatic acid is formed by the union of oxygen with simple muriatic acid, and the facts announced by Messrs. Gay Lussac and Thenard, that muriatic acid, contains one fourth its weight of water, and is not decomposable by any body, but hydrogen or such substances as are capable of forming with it triple combinations; Dr. Davy

* Phil. Journ. vol. 27. p. 321.

proceeds to state an experiment, in which charcoal, when perfectly free from hydrogen and moisture, produces no effect on muriatic acid and oxy-muriatic acid, even though heated to whiteness in contact with them. The result of this experiment led him to "doubt the existence of oxygen in oxy-muriatic acid, which has been supposed to contain it above all others in a loose and active state; and to make a more rigorous investigation than has hitherto been attempted for its detection."

His first series of experiments on the action of oxy-muriatic acid with tin, ammonia and phosphorus, and mixing ammonia with sulphuretted and phosphuretted muriatic acid, satisfied him, "that no substance known to contain oxygen could be procured from oxy-muriatic acid, by this mode of operation."

Dr. D. denies that oxy-muriatic acid and ammonia produce water, when mixed with each other. He found that when 15 or 16 parts of the former are added to from 40 to 45 of the latter, an immediate condensation of nearly the whole takes place, from 5 to 6 parts of nitrogen are evolved, and dry muriate of ammonia is formed.

The action of oxy-muriatic acid with hydrogen is then stated, and reference is made to the observation of Cruikshanks, that when the two gases are mixed in nearly equal proportions, a matter almost entirely soluble in water is produced; and to that of Messrs. Gay Lussac and Thenard, that this matter is common muriatic acid, and that no water is deposited during the operation.

"When these bodies," says Dr. Davy, "were mixed in equal volume over water, then introduced into an exhausted vessel and fired by the electric spark, there was always a deposition of a slight vapour, and a condensation of from $\frac{1}{10}$ to $\frac{1}{20}$ of the volume." In proportion as the gases were freed from oxygen and water, the less was the condensation.

Dr. Davy doubts the existence of water in muriatic acid gas. He observes, "Messrs. Gay Lussac and Thenard have proved, that in the usual cases where oxygen is procured from the oxy-muriatic acid, water is always present, and muriatic acid is formed; now as it is shown that oxy-muriatic acid is converted into muriatic acid by combining with hydrogen, it is scarcely

possible to avoid the conclusion that the oxygen is derived from the decomposition of the water, and consequently that the idea of the existence of water in muriatic gas is hypothetical, depending on an assumption which has not been proved, the existence of oxygen in oxy-muriatic acid gas."

After detailing the action of oxy-muriatic acid on mercury, tin and zinc, and proving the disengagement of hydrogen gas, to the amount of about half their volume, during the formation of muriates, he affirms, that,

"When oxy-muriatic acid is acted upon by nearly an equal volume of hydrogen, a combination takes place between them, and muriatic acid results. When muriatic acid gas is acted upon by mercury, or any other metal, the oxy-muriatic acid is attracted from the hydrogen by the stronger affinity of the metal, and an oxy-muriate exactly similar to that formed by combustion is produced."

"The action of water on these compounds, which have usually been considered as muriates or dry muriates, but which are properly combinations of oxy-muriatic acid with inflammable bases, may be easily explained according to these views of the subject. When water is added in certain proportions to Libavius's liquor, (*an oxy-muriate of tin*) a solid crystallized mass is obtained, from which oxide of tin and muriate of ammonia can be procured by the addition of ammonia. In this case oxygen (*from the decomposition of the water*) may be conceived to be supplied to the tin, and hydrogen to the oxy-muriatic acid."

The vivid combustion of substances in oxy-muriatic acid might be considered as a reason why oxygen should be admitted in it; but, says Dr. Davy, "heat and light are merely results of the intense agency of combination," and he produces as examples the production of these principles during the union of sulphur and metals, and of alkaline earths and acids.

The argument in favour of Berthollet's theory of the nature of the oxy-muriatic acid, founded on the analogy between its combinations with the metals and the common neutral salts, he thinks when strictly investigated will not be proved very distinct; and even allowing this analogy, "it may be applied with as much force to support an opposite doctrine, namely, that the

neutral salts are compounds of bases with water, and the metals of bases with hydrogen ; and that in the case of the action of oxy-muriatic acid and metals, the metal furnishes hydrogen to form muriatic acid, and a basis to produce the neutral combination."

The quantity of hydrogen disengaged from muriatic acid by the metals is considered as no proof of the presence of water in that acid gas. It is supposed that "the hydrogen is disengaged from its oxy-muriatic combination by a metal, in the same manner as one metal is disengaged by another from similar combinations."

Electricity does not decompose oxy-muriatic acid, nor the oxy-muriates of phosphorus and sulphur.

"As there are no experimental evidences of the existence of oxygen in oxy-muriatic acid gas," Dr.D.endeavoured to ascertain the nature of those compounds, in which the muriatic acid has been supposed to exist, combined with much more oxygen than oxy-muriatic acid.

Several experiments were made to obtain the neutralizing or hyper-oxy-muriatic acid free from its combinations ; but they were unsuccessful. From some of these he draws inferences unfavourable to the hypothesis of the existence of this acid.

"If the facts respecting the hyper-oxy-muriate of potash be closely reasoned upon, it must be regarded as nothing more than a triple compound of oxy-muriatic acid, potassium, and oxygen."

The large quantity of oxygen in this salt he supposes to be combined with the metal, and not with the muriatic acid.

"Few substances perhaps have less claim to be considered as an acid, than oxy-muriatic acid. As yet we have no right to say it has been decompounded ; and as its tendency of combination is with pure inflammable matters, it may possibly belong to the same class of bodies as oxygen." "May it not in fact be a peculiar acidifying principle, forming compounds with combustible bodies, analogous to acids containing oxygen or oxides in their properties and powers of combination, but differing from them in being for the most part decomposable by water ? On this idea muriatic acid may be considered as having hydro-

gen for its basis, and oxy-muriatic acid for its acidifying principle."

"The combinations of oxy-muriatic acid with lead, silver, mercury, potassium and sodium, in this view, would be considered as a class of bodies, related more to oxides than acids in their powers of attraction."

Data are then given, by which the weight of different elements may be found, and consequently, by which may be ascertained the composition of a dry muriate, the quantity of acid or of oxide it would furnish by the action of water, and the quantity of oxygen with which the inflammable matter will combine.

Potassium does not form hydrat of potash by combustion.

Charcoal is incapable of combining directly with the oxy-muriatic acid, but forms triple compounds with it and hydrogen.

Dr. Davy thinks that this view of the nature of muriatic and oxy-muriatic acids, and of the muriates, may possibly be applied with advantage to the solution of the problem of the decomposition of the muriates of potash and soda. In all attempts to produce this, water should be present.

Common salt is decomposed by passing steam over a heated mixture of it with iron filings.

Dr. D. then alludes to the extraordinary nature of the compound of oxy-muriatic acid and ammonia. "Three bodies, two of which are permanent gases, and the other of which is considerably volatile, form, in this instance, a substance neither fusible nor volatile at a white heat."

"They seem to show that the common chemical proposition, that complexity of composition is uniformly connected with facility of decomposition, is not well founded."

"Like oxygen, oxy-muriatic acid is attracted by the positive surface of voltaic combinations, and all its energies of combination correspond with those of a body supposed to be negative in the highest degree."

This interesting paper is closed with a detail of some further experiments on sulphur and phosphorus, in which, as results, it is stated that these substances combine only in one proportion with oxygen; that they contain oxygen and hydrogen combined with them; that they probably in all cases contain a small quan-

tity of hydrurets; that probably the pure oxides have never been obtained; and that during the combustion of sulphur and phosphorus in oxy-muriatic acid, provided no water be present, neither oxygen nor muriatic acid is produced.

(To be concluded in our next.)

OF THE DISEASE CALLED

THE SPOTTED FEVER.

Communicated for the New England Journal of Medicine.

It has been asked whether the disease which has appeared often within these few years in New England, and which is known under the name of *Spotted Fever*; is a *new* disease.—Before answering this question, we shall inquire, *what the disease is?*

It is not then, (like the small pox, or measles,) always *spotted*; for in some of its epidemic attacks, not more than one case in ten has exhibited spots. Being only occasionally therefore accompanied with spots, it seems somewhat out of rule to name it by a character which is so little constant.

But if the disease is not always spotted, is the disease *always attended with fever?* The answer is here again in the negative, provided we strictly adopt the definition of Dr. Cullen; which is as follows. "Febrile diseases are distinguished by the following appearances: after beginning with some degree of *cold* shivering, they shew some degree of *heat*, and an increased *frequency* of pulse; with the interruption and disorder of several functions; (particularly some diminution of strength in the animal functions.)"*—If this, and this only be fever, *spotted fevers* (so called) frequently, and perhaps even generally, do not range under the definition.

* See Cullen's First Lines, Vol. 1.

We shall in some measure prove this, merely by applying Dr. Cullen's definition to the ONLY CASES (five in number) given by D . Strong, junior, as specimens of spotted fever, which occurred in Connecticut in *January and February*, 1809.* The order of these cases will be changed, and the relation of them abridged ; both that we may more conveniently make them the subject of remark ; and that we may be the better prepared for shewing, that the definition of fever ought to be such, as will comprehend the disease before us. By exhibiting these cases, we shall also become more familiar with the general subject under our discussion.

CASE I.

A young mechanic of 19, firm in constitution and health, while playing at Morris was *instantaneously* struck blind. *Immediately* followed nausea and sickness ; next, a sharp pain through the temples and stomach ; and lastly, distraction : all in such rapid succession, that "in *five minutes*" from the date of the original blindness, the patient required four or five men to hold him. Three hours afterwards (namely at midnight,) his physician arrived, and found him still held by force to the floor; having excruciating pains in his head ; and a pulse which was indeed feeble, but so frequent, as (in the phrase of the author) to "appear to be one continued stream." Within eight hours from midnight, the patient took 480 drops of laudanum, with a small quantity of diluted spirits ; and obtained most essential temporary relief ; his pulse being now "regular and in every respect good, excepting that it was yet too feeble." At night however the patient relapsed into pain and into distraction, and was again restored by laudanum. We hear of nothing afterwards beyond debility, lowness, and occasional turns of light delirium, for a number of days ; by which time, laudanum and diluted ardent spirits, with wine, had restored him to perfect health.

* See an Inaugural Dissertation "on the Disease termed *petechial* or *spotted* fever;" by Dr. Nathan Strong, jun. ; an able performance, which appeared at Hartford, in Connecticut, in March, 1810.

Here was an attack without the cold fit of Dr. Cullen's definition. The mental agitations and bodily exertions of a man in a state of violent phrenzy, naturally gave immense *rapidity to his pulse*; and perhaps also produced *heat*, (though of this the reporter makes no mention.) The pulse however (for a time) recovered its natural *rate*, within eleven hours from the first attack; though it was still feeble; and continued feeble, till convalescence occurred.—In short, the seat of the attack appears to have been first in the head; with which the stomach instantly sympathized. We may also affirm, that the organs of sight suffered before either the stomach, the temples, or the intellect appeared affected.

CASE II.

A delicate young lady of 15, rode 30 miles in a very cold day in a sleigh, [the sleigh* being probably without a cover.] Next day "she complained of having a bad cold;" and at her bedtime (which she fixed at a very early hour,) she was seized, *when going to her chamber*, with a severe pain in her little finger. When she had been a short time in bed, the pain *ascended along her arm and soon reached her head*; at which time she was taken with puking. Being subject to sick headachs, her servant encouraged this puking with diluted drinks.—In the morning, the medical gentleman who had been sent for, "found her in a very low, depressed state; the whole surface [being] cold, and her pulse hardly perceptible." The patient after speaking only once during his visit, fell immediately into a profound sleep: which soon became the sleep of apoplexy; and at the close of twenty-seven hours from the first attack, it was exchanged for the sleep of death: the affected hand and arm becoming black "within five minutes from the time she breathed her last."

* English travellers speak of *sleds*, but more commonly of *sledges*, as carriages without wheels employed in snowy countries for travelling over the snow. The citizens of the United States call such of these machines as are destined for accommodating travellers by the name of sleighs, and those used for heavy articles by the name of sleds.

In the case of the preceding patient, we saw (as here) the stomach sympathizing closely with the head; but here the head being affected with stupor (instead of phrenzy,) the whole surface was cold. It must not here be said that the patient here died *before* the cold fit could terminate; for in the next case but one, the cold fit terminated in recovery, apparently without the aid of a *hot* fit.—Again; in another of Dr. Strong's cases, as in the present; a symptom will be found operating like the *aura epileptica.*—Lastly: in the case of another young female mentioned by Dr. Strong, a little motion in the cold air, by going from a sitting room to a chamber, was instantly followed by an attack of the disease in its severest form.

CASE III.

A slender delicate female of 18, had a very violent and excruciating headach. An evacuation having been procured by art, (though it was in itself "in every respect natural and healthy,") she experienced repeated faintings. It was now the second day; and her headach still continuing, it was no longer judged to be the nervous headach (to a moderate degree of which she was liable;) but the prevailing malady. The pulse was very feeble; the upper orifice of the stomach not only felt cold, but "faint" and "deadly;" the arms and feet were cold; one hand and one foot became *numb;* the affected hand even appeared livid: and a pain *beginning from the wrist and soon extending up the arm*, was followed by numbness in those parts; till, in the course of half an hour, the whole arm grew *paralytic* and insensible, and so remained for 6 or 7 days; the tongue at this time being also torpid and almost immoveable. After a time, the pulse was mended, and warmth appeared both in the limb and over the whole surface. This change was accomplished by the help of the ordinary internal stimulants, (but with the exception of wine and bark;) and also by the farther aid of Fowler's mineral solution, and of various external methods: the nourishment being coffee and soup, made so hot, as to be unfit for the use of persons in health. On the seventh day, wine was taken instead of brandy; and after a repetition of small doses of *calomel*, there was an evacuation perfectly *natu-*

ral. On the ninth day, uneasiness for her mother who lay sick in the same house, produced relapse ; and brandy was again substituted for wine. On the eleventh day, *carbuncles and pustules* appeared in different parts. In a short time the patient returned to her accustomed health and diet; and at the end of a year her health was even found improved, particularly by the loss of her nervous headach.

Here we have a second case to remind us of the *aura epileptica ;* that is, an affection is here to be traced back in a direct manner from the place where it was first perceived to the head. In other words, if the *root* of the evil was in the brain, the parts of the limb seem to have suffered in a retrograde order ; as a *branch* in a tree sometimes dies first at its extremity, and then backwards towards the stem and root.

But where is the order of the symptoms in this case, answering to those in the fever of Dr. Cullen ? Cold appears to have been slowly exchanged for natural warmth ; but never for *heat*, though the patient was a fortnight before she recovered ?—When the pulse also is named by Dr. Strong, it is for its feebleness, rather than its frequency ; though once indeed he speaks of it, in the way of comparison, as being "more frequent" than before.

In the two next cases we shall find not merely an appearance of *cold* at the beginning of the complaint, but even what Dr. Strong calls *an ague*, (by which we shall discover afterwards that he means a shuddering :) but in neither instance did a hot fit succeed.

CASE IV.

A boy, 7 years old, was seized in the night with pain and *ague*, which was soon followed by nausea and vomiting ; the pulse being frequent and extremely feeble ; the extremities cold ; and the whole surface cooler than natural. All attempts at relief were vain, till Fowler's mineral solution was given ; but even this could not prevent the intellect from being much affected, or keep off occasional attacks of drowsiness and coma. The bowels being much distended, senna, rhubarb, and manna were given ; and being aided by a clyster, a stool of perfectly *natu-*

ral appearance followed; but with great succeeding debility: an event which was again experienced under much the same circumstances. In general, the pulse was disposed to be feeble, and sometimes it even appears to have been slow; but never strong. The temperature of the body was in general cooler than in a state of health; and *aphthæ* also appeared in the fauces. On the seventh day, the patient began to convalesce.

This case indicates no course like that marked out by Dr. Cullen, for *fever*. The ague began the attack, but it excited no hot fit: nor was the pulse always quick. We now proceed to the last case to be given from Dr. Strong.

CASE V.

A "blooming" young lady (as she is called) of 11 years of age, who returned home from a neighbouring town [and probably in very cold weather,] in order to be with her mother, then ill of the epidemic complaint; remained to appearance well, till the next day. Immediately after dinner, when going up to her mother's room, "*on the stairs*, she was taken with a severe *ague*; her teeth began to chatter; and her whole body appeared in a tremor. She complained of an awful sensation of *faintness and coldness at the pit of the stomach*; and a peculiarly distressing *numbness* in one foot and leg. Her eyes looked *wild* and uncommonly brilliant; her *mind* was in a flighty state; her extremities cold; her pulse *feeble*. Brandy and laudanum were given; but wine being added, she threw up the whole, with her dinner in addition; nor could she from thenceforth retain any thing on her stomach for a moment. In two hours from her first attack, she became drowsy and comatose; and her throat was also *paralytic*. The disease resisting the only *remaining* means of applying remedies, her surface never became warm; nor did her pulse ever recover "its energy." After 15 hours from the first attack, (of which the last 13 were spent "in a state of *profound coma*,") she expired;—just five hours after her mother, whose illness had lasted 52 hours.

Here at least, it may be thought, that the patient *died* in the cold fit of fever.—But surely we have no reason to believe that

the ague fit, so called, was *permanent;* though no hot fit is mentioned as occurring. The patient merely fell afterwards into that state of torpor and mental disability, with which this disease so often *begins* and is accompanied, till death or convalescence closes the scene: and in that state, the tremor, &c. would naturally disappear. This case then is at least negative with regard to Dr. Cullen's definition.—We add, that we shall hereafter have to shew that this ague implied *convulsive trembling*, rather than trembling from cold; and Dr. Cullen's shivering, ought to be connected with "*cold.*"—We have farther to mention, that the case just recited contains the second instance to which we have alluded, in order to prove, that a slight exertion under that tendency to torpor which is produced by great cold, accompanied (as it is to be presumed) by a sudden stoppage of the pores, was the signal for the disease to commence its visible operations.

We have thus gone through these five cases, (being, as we repeat, the whole of those furnished by Dr. Strong;) as well in order to enable us to judge of the nature of the disease "termed the spotted fever;" as to ascertain whether it can be comprehended under Dr. Cullen's definition.

In *two* cases only have we found shivering at the beginning.

In *none* is heat said to have occurred: and in four, there was an appearance of coldness or chill.

In *none* was the pulse otherwise than feeble; though probably it was commonly quicker than was natural.

In *all* there were nausea and sickness; and in *two*, a sense of coldness and faintness at the stomach.

In *all* there was either pain in the head, mental derangement, or both.

In *all* but the mechanic (who instead of it was much deranged,) there was either coma or numbness; and in two, a partial palsy.

In *all*, we find the evacuations healthy, as far as they are noticed; though the efforts used to procure them, were such as generally bring forward signs of whatever is unhealthy in the digestive system.

In *one*, carbuncles and pustules were seen; and in another, aphthæ.

In all there was debility; and, unless where there was phrenzy, the debility commonly was from the beginning.

In two there were nervous habits, as was proved by nervous headachs.

This recapitulation is made more extensive than is necessary for the single object of proving the error in Dr. Cullen: but we must not forget that we have not only Dr. Cullen in view, but to make ourselves better acquainted with the disease. Our conclusions will become yet more forcible against Dr. Cullen, when we add the following general assertion from Dr. Strong (p. 10:) "in *more than a hundred* cases which the author carefully inspected, he found but *few* in which the heat was *up* to the natural temperature, and *rarely* any in which it was *above.*" —It is not denied that coldness (or an outward appearance of it) is prevalent in this disease, at least in its commencement; but there seems little chance of any re-action occurring sufficient to produce a *spontaneous heat. after it*; since we see both in the five cases which have been detailed and in the hundred others which have not been detailed, that the disease has little or no heat occurring throughout the *whole course of it*, and especially in its beginning.

But because we cannot avail ourselves here of Dr. Cullen's definition of fever, it does not follow that we must be content with having the disease before us excluded from the class of fevers.—We shall prepare the way therefore for a *new definition of fevers*, before we return to the subject originally before us.

The attempt to define fever is not a light one.—Dr. *Rush*, that bold and original thinker and very experienced observer, in his "*Outlines of a theory of fever*," says; "I shall not attempt to give a definition [of fever:] It appears in so many different forms, that a just view of it can only be given in a minute detail of all its symptoms and states." *Glass* and *Senac*, probably for similar reasons, offer no definition in their respective

works upon fever: nor do Doctors *Lind*, *Currie*, and *Jackson*; though the last three gentlemen complain either of the want of a good definition; or of the prevailing modes of classing the different species of fever, which in truth are erroneous chiefly through bad definitions.—*Bellini* also, who in the last age so much influenced medical opinions on the subject of fever; after spending above 160 quarto pages in classing and commenting upon fevers, with a view to know *what fever is*, or (as he explains it) *what is common to all fevers*; ends by affirming, that "it is something faulty in one or more of the following particulars; namely, the motion, the quantity, or the quality of the blood;"*—which is rather to enumerate the *internal* or latent causes of fever, than those *external* obvious signs of it which are to direct the practitioner.

Our desire is not to prevent the sanguineous or blood-system† from obtaining a principal share in the definition of fever; but we must include a variety in the modes of action in this system, or we shall not comprehend the fever before us. In the fever before us, the system of the blood-vessels or of the blood is essentially concerned. Not only Dr. Strong and others tell

* Bellini in the first sentence of his treatise on Fevers, says, that his objects are to know "quid sit febris;" and "quid unicuique febri proprium:" and then concludes his whole work with this proposition; "Febris est vitium sanguinis, aut in motu, aut in quantitate, aut in qualitate ejus; aut in horum aliquibus, aut in omnibus." This is his *thirty-fifth* and last proposition, founded (as we have said) on an elaborate description of *all fevers* whatever, *solely with a view to come to this conclusion.*

† A man of sense will always feel reluctance in employing a phrase not in common use; but we require a term here which is not only applicable to the blood-vessels, but to their contents. The expression *sanguiferous system* applies only to the vessels; the expressions *arterial* system and *venous* system together, still only relate to the same vessels; while the words *sanguineous* system or blood-system may belong both to the vessels and their contents.—By the help of these terms, we may then speak as currently of the sanguineous or blood-system, as of the nervous, lymphatic, and other systems. The expression in question seems more suitable even than that of the *circulating system*; since we are not sure that the sanguineous or blood-system is the only system in the body to which the term *circulating* will apply.

us, that a feeble action in the pulse at the wrist, may here be accompanied with a violent action in the carotid arteries ; but by dissections we discover, that in the head in particular, there are great accumulations of blood and of such fluids as are secreted from the blood in some peculiar states of it. We also farther learn, that the red particles of the blood are here much fewer in quantity in the muscles and in those parts which usually appear red ; and on the other hand are so collected in other parts, as to give to the blood in those other parts " a very dark hue." The blood also has other marks about it in this disease so different from those attending it in its ordinary healthy condition, that though we have as yet no warrant for calling the blood in this disease putrid, acrid, alkaline, effervescent, and so forth ; yet to use a happy expression of Dr. Rush's, we may at least say, that it is *disorganized.*—But in endeavouring to define fever, we must look beyond even the present disease ; and recollect that the definition ought to embrace *periodical* fevers ; where the febrile disease remains inherent in the constitution ; though during the *intervals* of the fits, there is often an appearance of perfect health.—Lastly, in the proposed definition of fever should be comprehended those cases, where for a time at least, the *pulse is at or below the natural rate ;* though it is soon perhaps to become very rapid ; as in various cases of inflammatory, bilious, and other fevers.

Again ; still better to prepare us for perceiving both the necessity of having a new definition of fever, and the proper points to be sought for in it ; we shall recite a number of definitions by others ; beginning with those collected by Dr. Cullen in his *Nosology*, and repeating in the first instance his own definition, in the Latin form which he there gives to it.

Dr. *Cullen* there defines fever, nearly as in his *First Lines. Post horrorem, pulsus frequens, calor major, plures functiones læsæ ; viribus (præsertim artuum) imminutis.*

Sauvages says of fever, that it has *Pulsus magnitudo & frequentia ; cum frigore in insultu, fervore in decursu, madore in declinatione ; et semper virium prostratione majori, quam a virium vitalium gradu foret expectandum.*

Linnæus rests all on one particular, which we know is often wanting. *Febris dignoscitur pulsu citato.*

Vogel's definition follows. *Innati caloris augmentum præternaturale ; cum oris siccitate ; et gravitate corporis.*

Sagar's definition is the last in Dr. Cullen's Nosology from foreign writers. *Frigus ; calor ; pulsus frequens ; respiratio aucta ; viribus artuum imminutis, depravatis ; vel viribus vitalibus (pulsu et respiratione) vix mutatis ; virium artuum summâ prostratione.*

To these definitions collected by Dr. Cullen, we shall add others ; beginning with that of the celebrated Englishman Willis ; who ascribes the following characters to fever. "*Motus inordinatus sanguinis, ejusque nimia effervescentia ; cum calore, et siti, et aliis præterea symptomatis quibus œconomia naturalis variè perturbatur.* (De Febribus, c. 3.)

In the Edinburgh translation of *Van Swieten's* commentaries on *Boerhaave*, (Vol. 5.) we read thus.—"The term *fever* is derived from the Latin fervor* (heat,) according to the opinion of the most ancient physicians ; but others derive it (a februando) from a *purification or cleansing*. The first derivation is more agreeable to the opinion of the ancient physicians, who have pronounced heat to be the essence of a fever ; for πυρετος and πυρεξις, (which signify a fiery heat,) are words also commonly used by the ancient physicians to denote a fever ; and even Galen observes, that a fever when very violent is by Hippocrates called (πυρ) fire. But the latter derivation is more agreeable to many, because by a fever the body is frequently depurated."—Soon after follows the definition of fever by *Boerhaave*. "In every fever arising from *internal* causes, there is always a shivering, a quick pulse, and heat ; varying in degree, at different times of the fever."

* Van Swieten might have made *ferveo* the root ; and this, Ainsworth derives from *ferbeo* ; for the letters *b* and *v* are often exchanged, and the middle consonants in ferbeo (pursuant to a frequent custom) will admit of transposition.

Of the opinion of the ancients as to the definition of fever, it is needless to inquire ; the ancients having been still less successful on this subject than the moderns.

Dr. Darwin, attached to his own peculiar systems, thus defines fever. "It consists in the increase or *diminution* of direct or reverse associated motions; whatever may have been the cause of them."*

Dr. George Fordyce in his *Elements of the Practice of Physic* (4th edition) merely *describes* the hot fit, the cold fit, and the crisis of the fit, in fever; but does not *define* fever at large.—In his *Third Dissertation on Fever*, which speaks of *regular continued fever*, he says thus. "An ephemera, or fever consisting of one paroxysm only, (or in other words, of a cold fit, hot fit, and crisis,) is easily distinguished from any other disease: nor is it difficult to distinguish an *intermitting* fever, if regular; (as it consists of regular paroxysms, similar in all their parts to the one paroxysm of an ephemera.)—But a fever going on for many days, without any appearance of *crisis*; (having only one marked crisis after a continuance of two or three weeks, or going off perhaps without any marked crisis;) is with *difficulty distinguished from many other diseases*. This seems to be the principal cause of the confusion found in the works even of practical authors, who have treated on this disease." Dr. Fordyce however thinks, that such a fever (which he supposes to be pure and without any peculiar local cause or affection,) "is only a repetition of ephemeræ, where the subsequent paroxysm begins, before the crisis of the former [has commenced.]" On the other hand, he conceives, that "the paroxysm in a *regular tertian* is exactly similar to the paroxysm of a simple fever; the only difference being, that in a *tertian*, the crises of the first paroxysms are not so complete, as to carry off every appearance of the *first stage*."—The author farther considers fever, as "a disease of the whole system;" and adds, "that when a cause is applied which produces fever, it produces it *uno ictu*, at a blow; and the disease continues afterwards, although the cause be no longer applied; neither is [the fever necessarily] increased, diminished, or altered by farther application of its cause. The author therefore would not admit any affection of the general

* See his "Sympathetic Theory of Fever," placed at the close of his Zoonomia.

system to be a fever, which depends [for its continuance] upon the *constant application of the original cause.*"*—The author offers various distinctions on these subjects, but not in the form of a definition.—The want of Dr. Fordyce's First Dissertation on Fever, and of the works of Doctors Clutterbuck and Beddoes on Fever (neither of which are at hand,) prevents a farther pursuit after the opinions of others as to the definition of Fever.

We shall now therefore propose the following as the definition of fever, meaning to include therein the disease before us.

Fever then appears to be "*An extensive morbid affection in the blood vessels, or else in their contents; which sometimes discovers itself solely at intervals; and which commonly deranges one or more of the greater functions, as well of the body, as of the mind, in a manifest manner.* This definition we mean should apply not only to cases of *pure general* fever, but to fever with a *local* type, and to *symptomatic* (that is, to accidental) fever; for whether febrile affections be direct or secondary, it may be presumed, that the system of blood-vessels, or else the contents of these blood-vessels, are then disordered: and thence will be attended with the usual consequences of such disorder.

Having thus sought to provide a place for the disease called *spotted fever*, in the general order of fevers; we shall now endeavour to shew first, to what species of fever it belongs; then secondly prove, that it is a disease heretofore perfectly well known, both as to its general characters, and in many respects as to its treatment; and lastly, offer a few hints as to the course to be pursued for understanding the causes of this complaint.

1. As to the question what species of fever this is, our cases from Dr. Strong have already in a principal degree decided; for in all of them there was a marked affection of the *brain or nerves*, accompanied with *debility*; and one of the cases, which had run its course, exhibited *pustules and carbuncles*. It may be called then for our present purposes, a *malignant nervous fe-*

* See his Third Dissertation on Fever, Part i. p. 1—4; and his Second Dissertation on Fever, p. 9.

ver ; leaving a more scientific name as a subject to be discussed hereafter.—It is necessary, in the mean time, to explain what we mean by the term *malignant*. In the first place it is opposed to *benign* or mild ; for as we speak of malignant small pox and malignant measles, in contrast with other cases of these disorders which are benign ; so we may speak of malignant nervous fevers, in contrast with other nervous fevers which are of a milder nature. In the next place, Tissot (agreeing herein with Etmuller and others) says, that "those fevers are termed *malignant*, in which the danger is more than the symptoms would make us apprehend :" "on which account (he adds,) it has been well said of this fever, that it is *a dog which bites without barking*." In the last place, it will perhaps be found, that the term *malignant* has commonly had some reference to sores and corrosive humours; which frequently attend those nervous fevers, where the pores of the skin are obstructed and the strength is commonly laid prostrate ; an union of circumstances which has made the basis of several dreadful epidemical diseases, being often (as in our present disease) fatal in the course of one or two days, and sometimes within a few hours. It is perhaps under this impression, that Bellini says, *Febris maligna ; κακοηθης, mali mores ;* beginning his description of it thus. "*Species quadam benignioris febris : nempe mitior calor ;* quo fit, ut principio lateat natura febris deterioris. Paulo post principium, insignis *imbecillitas* sine causâ manifestâ, et major quàm pro *febris et caloris* naturâ, &c." Lower down he adds, "Nihil malorum est quod cum malignis febribus aliquando non conjungetur ;" and he then proceeds to enumerate various kinds of eruptions which at times accompany these fevers.

Dr. Rush, who conceives that malignant fevers affect the whole *arterial* system, with little or no local disease, says, that they constitute "the *highest* grade of morbid diathesis."—Perhaps it will hereafter appear to this very eminent man, that if the arterial, or even the *whole* blood-system, should really be first influenced ; yet that the nervous system is also immediately afterwards affected.—Dr. Rush tells us, that the disease "is known by attacking frequently *without a* chilly fit ; by co-

mâ; a depressed, *slow*, or intermitting pulse; and sometimes by the absence of pain; and with a *natural* temperature, or *coldness* of the skin. It occurs in the plague, &c." After some remarks on the blood-vessels, &c. in this disease, he notices, that "this prostrate state of fever more frequently, *when left to itself*, terminates in petechiæ, buboes, carbuncles, abscesses, and mortifications; according as serum, lymph, or red blood, is effused in the viscera or external parts of the body. These morbid appearances (he says) have been ascribed to putrefaction; and the fever has received from its supposed presence, the name of *putrid*." Dr. Rush then combats the doctrine of those who contend, that the blood in its general mass can be putrid in the living animal.—Without entering however into this dispute, it is enough for us to mark the connection of the several particulars concerned in *malignant fever*, as stated by Dr. Rush. Sometimes he finds no cold fit; sometimes none that is hot; the pulse, we perceive, may be slow; the brain also may be affected; the strength may be wholly taken away; and the disease by its nature tends to eruptions. In parts of his description which we have not yet quoted, he refers to convulsions, palsy, and faintings; and to something corresponding in its motions to the *aura epileptica*.—To this assemblage of symptoms we shall for the present only add that of the *stoppage of the pores*; which appears never to have been wanting, in this country, in what is called the spotted fever; and which we shall find hereafter is a most important feature in it.

One word more will discharge us from all farther present necessity of attending to our definition of fever. We observe then that we have made no mention in it of *typhus*; first, because by many, typhus is supposed to have some reference to putrescence; which is not the habit of our fever. In the next place, typhus is a term that probably is commonly misunderstood; for whoever will consult Fœsius's *Œconomia Hippocratis** will find, that in the language of Hippocrates and Galen, typhus

* This Œconomia Hippocratis is in effect a Clavis or Key; that is, a Dictionary for the use of those referring to the original works going under the name of this author.

(τυφος) apparently means *stupefaction* : which though it will oftener be found the companion of *malignant nervous*, than of *putrid* fever, is not so frequent a companion of the former disease as to give to it its name.

We shall now then produce farther proofs of the nature of our fever, particularly as regards its general type or habit.

Dr. Strong considers it as "evident from the symptoms, that the principal seat of the disease is in the *brain and nerves*." He adds, "This we think appears from the delirium and coma, which almost always attend ; from the dilatation and contraction of the pupils ; the dimness and loss of sight ; the depravation of taste ; the frequent nausea and puking, while the contents of the stomach do not appear to be morbidly affected ; from the severe pains in the head ; from the numbness which creeps over the surface, and the torpid insensibility which pervades the whole system." By mere accident, this attentive observer omits, in this place, to state the additional proofs of his position arising from the *coldness* usual in the extremities and surface ; the general languor of the blood-system, except in the head ; the usual injury from bleeding and purging ; and the relief from stimulants, &c. He however *includes* all this, when he says, that "debility and great prostration of vital energy are the enemies with which we have to contend ; and that the first, the great (he almost says) the ONLY, indication of cure is, to support the powers of life.—So far Dr. Strong.

The Committee of the Massachusetts Medical Society give a striking confirmation of these positions in their report on this disease, both as regards its symptoms and the appearances after death : and it is to be observed that they speak in general from the *severer* cases.

The *symptoms* to which we refer are chiefly the following. The disease sometimes occurs by a *sudden stroke*, as in apoplexy or palsy. Sometimes it is temporary apoplexy itself, in the shape of coma or stupor. Sometimes it is palsy in a paralytic limb, and sometimes it is the palsy of numbness : sometimes the throat is palsied : sometimes hemiplegia occurs : and sometimes it is an

one side only that the vessels are affected. When sudden pains begin the disease, though they shift, they confine themselves in various instances only to one side. The head is generally the first part struck with pain ; and the pain of other parts generally tends to the head ; the head being rarely or ever free throughout from pain or some other affection ; and when the pain has been very violent, this affection is commonly delirium, and often phrenzy. Blindness or some other peculiarity, and especially a dilated or contracted pupil, commonly attends the eyes ; but the other senses, the feeling excepted, seldom suffer. The bodily powers seem dissolved. The chills are commonly general, with paleness : and though *warmth* in the second stage of the complaint is spoken of, after warm remedies have been applied ; yet nothing is said of general *heat*. The spirits are depressed, as in the deeper nervous affections. The heart seems distressed ; and the pulse, after being first slow, soon quickens ; but is always small and feeble, and sometimes highly variable. The stomach is irritable. There are frequent faintings. The breathing is laborious. Death may occur in 10 or 12 hours. Recovery from some of the worst cases has even in a few days sometimes only left behind a slight debility. The disease may attack more than once, as well as be attended with relapses.—Other symptoms will be noticed in another place : These regard the point at present under consideration.

(To be concluded in our next.)

☞ The following Note should have been inserted page 240, line 14, after the word "*manner*."

* The *functions* to which we in general refer, as being jointly or severally disturbed in a manifest manner, are the following, viz. those which respect, *first*, the pulse, breathing, temperature, muscles, nerves, and digestion, with the secretions and excretions : or *secondly*, the mind, senses, appetites, and sleep.

REMARKS

ON DISEASES RESEMBLING SYPHILIS;

WITH OBSERVATIONS ON THE ACTION OF THOSE CAUSES WHICH PRODUCE THEM.

BY WALTER CHANNING, M. D.

(Continued from page 150.)

DR. ADAMS, in his work on morbid poisons, has given us an account of the appearances which the venereal chancre exhibits. On this subject he remarks, " Nothing can be more certain than the true character of a venereal chancre ; and nothing cured with more certainty. The difficulties and intricacies attending this form of the disease, have arisen from *indolence*, *ignorance*, and *artifice*." Again, " The time after the application of virulent matter, till the appearance of chancre is somewhat uncertain. The common period is from a week to fourteen days ; perhaps ten days may serve as a general medium. But before the appearance of even a vesicle, the patient, if he is in that situation of life, which gives him leisure to attend to every little inconvenience, is sensible of occasional pains, which become more frequent as the period arrives. If the disease, as is most frequently the case, is situated at the bottom of the frænum, there is always *some uncertainty* in its *first appearance*, because there has been usually a rupture of the frænum, which of itself would produce a ragged, and sometimes a sloughy sore. In this case we can only judge at first by the nature of the pain, which in chancre, every intelligent patient describes as a *hard* kind of pain. This is different from common soreness ; the sensation of something which will not yield or be accommodated, being superadded. In a short time, however, a regular coarse granulated surface shews itself, of different shades from

white to a greyish ash or dusky brown colour. By candle light it appears whiter, especially if covered with pus. In a little time, an excavation discovers itself, which is regularly deeper from the sides to the centre. There is a *peculiar hardness* arising from a general thickening under the whole surface. This is more remarkable at the edges, because it is discoverable by the eye, and on touching the part, the hard feel will be imputed to the edges only, unless the examination be very accurate."

When the disease attacks other parts, as the glans, or prepuce, the appearances at first will not be so striking, but if the matter applied be that of chancre, Dr. A. tells us these characteristic appearances will soon take place.—Our limits will not allow us to quote the excellent matter the work referred to contains on the cure. We only remark that it is placed both in local and constitutional treatment. Dr. Adams prefers mercurial frictions to all other methods of using the specific. But if circumstances should be such as would render it necessary to use pills, they should never be made of the salts of mercury, but of the metal itself rubbed down with conserve or any other convenient vehicle; and strongly recommends to the practitioner "a careful daily examination into the progress of the disease, and the effects of the remedy on it, and on the system at large."

That we may if possible, after the quotations from Mr. Hunter and Dr. Adams, make the character of chancre still more striking, we shall quote what Mr. Abernethy says on the same disease in his work on Pseudo-Syphilis. "The striking characters of the disease are an ulcerating inflammation without any reparation, attended with induration of the surrounding parts. The description is a sore of a somewhat circular form, excavated, without granulations, with matter adhering to the surface, and with a thickened base and edge. There is another species of chancre in which the disposition to indurate is greater, so that the elevated surface may heal, and leave an indurated knob or tubercle in the affected part. But it is impossible to depict by words the various sores, some of which are of a very irritable nature, that are produced by sexual intercourse, and through the medium of which the constitution becomes conta-

minated; neither is it possible to know from local circumstances whether they be syphilitic or otherwise. It is from their effects upon the constitution alone that we can judge whether they were syphilitic or not. Many we know are not so, since they do not produce the constitutional effects of syphilis. The subject can alone be decided by future experience, derived from watchful observation, made by unbiassed men. Mr. Hunter thought that syphilitic poison might produce a sore which might be modified by the constitution and the part, and thus lose its distinctive characters."

We shall now present to our readers what we have been able to collect, on the characteristics of those diseases *resembling* syphilis. We do not mean, in this part of the subject, to relate what Celsus has stated on the subject of local diseases of the penis, but refer our readers to his work.

Mr. Hunter, who had such opportunities for observing the venereal disease in all its forms, as enabled him to produce the most valuable work on the subject, thus remarks concerning those diseases which barely *resemble* it. "But if a disease is suspected to be venereal, though it is not perfectly marked, yet if it resembles the venereal in most of its symptoms, it must be supposed to be venereal, that being the most probable, although not the most certain; for probably the venereal can *hardly be demonstrated in any case*, especially in the form of the lues venerea, from its not having the power of contamination;" (page 568, last edit.) and again (569.) "sores on the glans penis, prepuce, &c. in form of chancres may, and do arise without any venereal infection, although we may observe that they are in *general* a consequence of former venereal sores which have been perfectly cured."

Mr Hunter was not a man who wrote for the mere sake of writing. His reputation rests on facts, and on such reasonings which necessarily flowed from them. Although he does not enter into a minute detail of the peculiar characters of those diseases which resemble syphilis, he cannot be supposed to have hazarded a remark concerning them which might influence our practice, on conjecture alone. "Other diseases," continues he (p. 570) "shall not only resemble the venereal in appearance,

but in the mode of contamination, proving themselves to be poisons, by affecting the part of contact, and from thence producing immediate consequences similar to buboes; also remote consequences similar to lues venerea." We will now quote Mr. Hunter's observations on the indiscriminate use of mercury in those local and constitutional affections which resemble syphilis. (p.570,) "As errors in forming a judgment of a disease lead to errors in the cure, it becomes almost of as much consequence to avoid a mistake in the one as in the other; for it is nearly as dangerous, in many constitutions, to give mercury where the disease is not venereal, as to omit it in those which are; for we may observe that many of the constitutions which put on some of the venereal symptoms when the disease is not present, are those with which mercury seldom agrees, and commonly does harm. I have seen mercury given in a supposed venereal ulcer of the tonsils produce a mortification of those glands, and the patient has been almost destroyed."—These and similar remarks are all we obtain from Mr. Hunter. We agree with Dr. Adams, that he did no more, is less surprising than that he did so much. "The man," continues Dr. A. "who had ascertained the laws of the venereal disease, and every possible variety occasioned by whatever cause through its progress and cure, could alone account for certain appearances, which, in every stage, and in the means of cure, differed from that disease; that we should take shame to ourselves for having confounded with it on the *mere coincidence* of a *few events*."

Mr. Hunter however gives us no history of these diseases (I mean now more particularly the local ones on the penis.) There is in his work one case communicated by Mr. French, of the description of those we are now considering, but which while treated with mercury, was found to spread so rapidly as nearly to destroy the glans penis, before the *remedy* was laid aside. This was probably a case of the *sloughing Phagedena* of Dr. Adams; the *nigrities serpens* of Celsus. Could the events have been few?—Must not the coincidences have been very striking to have given occasion to the remarks of Mr. Hunter? Every author we have consulted, who has treated on the subject, appears to have been baffled in his attempts to discriminate between the

two diseases; and has been obliged in almost every individual case to depend upon experience to ascertain the nature of either. We pay the highest deference to the opinions of Dr. Adams; and while we bewail Mr. Hunter's silence on the specific characters of the diseases resembling syphilis, we regret that we do not possess the scrutinizing powers of Dr. A. The next work which claims our attention is that of Mr. Abernethy. This author's sole object is to treat of diseases resembling syphilis, and we shall therefore borrow from him as much as our limits will allow.

Mr. Abernethy gives to these diseases the name of Pseudo-Syphilis, and dwells at some length on the very great importance of distinguishing them from Lues Venerea. His views on this subject so nearly resemble those of Mr. Hunter, that we shall not quote them here. But although so important, he considers it equally difficult to accomplish it. "If then," says he, "the occurrence of such cases be frequent, and the necessity of discriminating them from those of syphilis be of great importance, we may solicitously inquire by what circumstances we are to distinguish between diseases so similar in their appearance, but so different in their nature. Mr. Hunter seemed to wish the prosecution of this subject, probably from the expectation that some characters appropriate to these diseases might be detected.—*I have not however been able to discover any; the fictitious disease in appearance so exactly resembles syphilis, that no observation, however acute, seems to be capable of deciding upon its nature.*" Concerning the characteristic induration, considered by Mr. Hunter and Dr. Adams, so peculiar to chancre, Mr. Abernethy has found it so exactly counterfeited, as to be completely deceived, so much so as to resort to mercury as the most appropriate remedy. But the progress of the disease under its use was found by him so far from being arrested, to have been more rapid in the aggravation of all the symptoms. These however soon yielded to other remedies. We have elsewhere quoted from Hunter, that the characteristic appearances of real chancre are sometimes modified by the constitution. Mr. A. observes (p. 45—6) "that true syphilitic spots and ulcers sometimes assume the appearances of other

diseases, and do not possess their ordinary characteristics." This is a new source of error, and may be one of very dangerous tendency. For although it is not directly expressed, that the *nature* of the disease is altered, it almost necessarily follows that, that is the case. A patient under these circumstances perhaps never requires mercury. For these modifications of the disease may be the effect of mercury, which not only might not demand the use of that remedy, but would only be exasperated by it. I think in this way we can best account for those violent and sometimes fatal cases, reputed to be syphilitic. I have seen such cases, the subjects of which have appeared to sink under the violent symptoms of a mercurial disease superadded to what was called incurable lues.

"Since then," continues Mr. A. (having mentioned the difficulties which prevent a discrimination between syphilis and its counterfeits, in their first attack,) "our senses fail us in discriminating between these two diseases, and since the most important circumstance is to discriminate whether the disease be syphilis or not, we may inquire, whether there are any *circumstances in the progress* of these different diseases which will serve us in distinguishing one from the other. It appears to me that there are; and these cases (viz. those related in his book,) are published not merely to shew the frequency of such occurrences, and the necessity for discrimination, but to engage a more general attention to the means by which such distinction may be made. A very simple fact has enabled me in most cases to distinguish between the two diseases; yet simple as it is, if it be generally true it is very important; and if it were universally true, it would be of the highest consequence. The fact alluded to is, that the *constitutional symptoms* of syphilis are generally progressive, and never disappear unless medicine is employed. It may be added too, they are as generally relieved under an adequate effect of mercury on the constitution."

(To be concluded in our next.)

ON THE

EFFECTS OF THE CARBONATE OF IRON

IN

THE ULCERATED UTERUS.

BY WM. GAMAGE, JUN. M. D.

THE advancement of correct knowledge in medicine, has been retarded by indiscriminately confounding those diseases which have a resemblance only in some unessential particulars. This has arisen sometimes, probably, from inattention to the character of the disease, and sometimes it has been designed. A desire to enjoy the satisfaction of having written a book, has, undoubtedly, induced many to christen with the name of some formidable disease, cases, which bear to it only a sort of likeness; and ascribe their successful treatment to their administration of a medicine not in common use in that disease. An effect of this practice, instead of adding to the stock of information, is to increase the labour of investigation after truth. Another effect has been to give a surreptitious reputation to some article of the materia medica, which, after disappointing the hopes of the sanguine, and wearying the patience of the careful observer, has again sunken to its wonted insignificance.

Cancer, a disease which has baffled the powers of medicine, so far as they are yet known, has afforded a convenient cloak for this kind of deception, and it has not been unimproved. The mountebank dignifies with it the most simple tumours, and the most common ulcers, which he cures by his secret nostrums: and men of a more respectable standing sometimes descend to similar practices; first probably deceiving themselves, and then the public.

These remarks were excited by reading a book, entitled "An essay on the effects of the carbonate of iron on cancer," published by Mr. Carmichael, of Dublin, in 1806. We do not, however, place this gentleman in either of the above mentioned classes, as he seems to have been actuated by the best intentions. But that total want of discrimination between apparently similar, but really different diseases, observable in his essay, is seriously to be lamented.

Very few of the cases reported by Mr. Carmichael, either in his essay, or in the Medical and Physical Journal, and no one, which exhibits his brilliant success, has, as we conceive, any well marked relationship to the disease, under which he chooses to rank them. They are, however, formidable in their character, and have not, we believe, been easily reduced to the control of medicine. We are therefore obliged to Mr. Carmichael for the increased ability, which we gain over them by the introduction of the preparations of iron, as remedies ; and he probably would have gained quite as much reputation, had he permitted each variety of disease to appear in its own natural garb.

The object of this communication is not to criticise that gentleman, but to offer additional evidence in behalf of the carbonate of iron, not as a specific for cancer ; experience commands the most decided protest against it, as a remedy in that disease, when in consequence, any more effectual mean would be delayed. In two cases of cancer of the uterus, two of the breast, and in one of the parotid gland, it was administered with care and perseverance, without the least apparent benefit.* Oppor-

* In one of the cases of the uterus, the disease was in a very advanced stage, previous to the administration of this medicine. In the other, it had progressed only so far, as to evince its genuine character ; but its advancement to a fatal termination appeared to be uninterrupted by the carbonate of iron. In this case, before the destruction of the patient, the scirrhosity had extended along the whole vagina, and on one side involved the inferior extremity of the external labium.—In the one case of the breast, ulceration had taken place, and the disease had gone far beyond the reach of the knife ; in the other, the glands of the breast were in the scirrhous state, the skin in contact with the scirrhous part, and a discoloration had commenced in it ; but a probability of a cure by the knife still remained, could the patient have been persuaded to consent to the operation. In

tunities of giving it a trial in all the variety of ulcers, in which Mr. Carmichael used it, have not occurred to me; but I have prescribed it with the happiest effects in a disease, which I will take the liberty of denominating the phagedenic ulcer of the uterus.*

This disease bears in many points a resemblance to the carcinomatous state of that organ, and especially, in its advanced stages, its effects are very similar. The most certain mark of distinction, appears to me to be the different degrees of hardness produced in the part by each disease; the sensation to the touch arising from the hardness of the ulcerated, is so obviously different from that arising from the flinty hardness of the carcinomatous state. Some of the most prominent symptoms of the ulcerated uterus are soreness in the hypogastrium, bearing down pains, weakness in the small of the back, shooting pains from hip to hip, (this symptom is not always present, and when it is, it is not to be compared with the distressing, lancinating pain, which uniformly accompanies the carcinoma of this organ) some degree of enlargement of the os tineæ, and fundus uteri, irregularity in the catamenia, and a constant leucorrhæal discharge. As the disease advances, great emaciation takes place; the countenance is sallow and distressed, pulse small and feeble, there is a constant drizzling of blood, and a sanious discharge per vaginam, the labia of the os tineæ feel uneven, and the patient is subject to paroxysms of pains, like the parturient, accompanied with great hemorrhage.

The following cases are examples of this disease.

CASE I.

In June, 1807, E. T. aged about 22, applied to me for advice on account of severe pain and weakness in the small of her

the case of the parotid gland, the disease had advanced too far for extirpation.

Besides the carbonate, I used in these cases the sulphate and the muriate of iron. I have not tried the phosphate nor the oxy-phosphate, which have been favourite preparations with Mr. Carmichael.

* One case, which appears to me to be of this description, is reported in the essay above mentioned, as successfully treated by the carbonate of iron. Mr. Carmichael, however, denominates it cancer of the uterus.

back, accompanied with a constant bearing down of the uterus. She had been afflicted in this way for a long time, and she said she had had, for a number of years, a whitish or yellowish discharge per vaginam, interrupted only by the catamenia, which had generally been irregular, in great quantities, and attended with indescribable sufferings. She was emaciated, countenance pale, pulse quick and feeble. Conceiving that these symptoms might be the effects of a long continued leucorrhæa, I prescribed for that complaint. In the course of two or three months, she gained something in her general health ; but there was very little amendment in her disease, the weakness, pain and discharge continued, as at first. Suspecting a more serious difficulty than at first occurred to me, I made an examination per vaginam ; this was unnaturally dilated, and there was some degree of prolapsus uteri ; the os uteri was thickened, hard and uneven to the touch ; the fundus, as was ascertained by examination per rectum, was of a very unnatural size. I immediately prescribed the carbonate of iron in the form of an electuary, with conserve of roses in doses of half a drachm thrice in a day In this dose it caused no inconvenience, and after taking it for some time, she found herself much relieved. She continued to take it, irregularly however, for nearly two years ; but I did not know the result of the case, till in Nov. 1810, I learned, from her situation at that time, that she had no remains of her old complaint.

CASE II.

Feb. 11th, 1808—Mrs. C. a woman of feeble constitution, but whose occupations were laborious, and who had borne two or three children without any uncommon difficulty, was taken with severe parturient pains, which, after an hour's suffering, expelled from the uterus about a quart of a substance resembling in colour and consistence calf's feet jelly, adhering by a pretty firm membrane, like the cellular. Great hemorrhage preceded and accompanied this expulsion, but ceased immediately after it ; and when I arrived, she was tolerably easy. I made an examination per vaginam, and found the os uteri hard and very little dilated ; I could however introduce my finger, but discovered

nothing remaining in the uterus of a firmer consistence than what had already come away. The hypogastrium exhibited no fullness, or hardness. She informed me, that she presumed she had been pregnant about three months; but she was not certain; for during the last six weeks, there had been, constantly, a little show of blood per vaginam.

She was very weak on the 12th, but recovered in a short time, so as to attend to her family. She continued, however, to have a drizzling of blood per vaginam, and on the 10th of March a profuse hemorrhage came on, preceded by some bearing down pains. Some ragged pieces of a substance of a firmer consistence than coagula, and resembling flesh, were expelled, the largest not bigger than the thumb, and the hemorrhage ceased. The labia of the os uteri were thickened and hard; the internal situation of the uterus could not be ascertained; its fundus was enlarged and hard. An anodyne was directed, and the aromatic sulphuric acid, three drachms in 24 hours.

On the 12th, 13th, and 14th, small pieces of the fleshy substance came away, accompanied with blood, sometimes with pain, and sometimes without the knowledge of the patient. These repeated evacuations reduced her to extreme weakness; she fainted often, and life could with difficulty be supported. In addition to the acid, half an ounce of the powder of cinchona divided into doses, was given every 24 hours, with wine, porter, &c. She was gaining a little strength, till on the 28th she had a considerable hemorrhage, and more pieces of the fleshy substance were expelled. This again reduced her very low. Appetite bad, had some cough, a flush of heat occasionally come on the skin; pulse 120, and feeble. Quantity of bark increased to six drachms.

No important change took place till April 8th. She had a severe rigour, which was followed by a copious discharge of a serous fluid, with a bloody and offensive matter of more consistence, and some small pieces of the fleshy substance. This occurred in about the same quantity regularly for three or four mornings in succession, and then ceased, except a small discharge of offensive matter, which continued. The os uteri still remained hard, and on one side was very uneven, and seemed

to be partly destroyed. All her symptoms were augmenting in severity; cough very troublesome, pulse 120, and sharp, and the hectic flush made its regular and daily return. The bark was increased to an ounce in 24 hours, but without any apparent advantage. The disease increased in virulence, and my patient was fast yielding to its destructive power. I at last concluded to substitute the carbonate of iron in the place of the bark, and she commenced the taking of it about the 1st of May, in the following electuary.

℞. Carbonatis ferri - - - ℥ij.
Pulveris cinnam. composita - ℥j.
Conservæ rosæ gallicœ - - ℥jss.
Misce, fiat electuarium.

of which a piece of the size of a small nutmeg was taken three times in a day.

In about a week she seemed better; appetite increased, discharge per vaginam diminished, and other symptoms more favourable. Dose of the electuary repeated four times in 24 hours. At the end of another week her amendment was more evident, and she was sensible of having gained; but flattered by a promise of an immediate cure, she was persuaded to trust herself to the direction of a female quack, and thus our fair prospects were interrupted.

After about fourteen days, I was again desired to visit her. I found her in a most deplorable situation; countenance ghastly, skin dry and parched, cough almost incessant, pulse rapid and small, and the discharge per vaginam in great quantity, thin, excoriating, and very offensive. I immediately directed wine with the tincture of cinnamon to be often given in small doses, and such nourishment as she could bear. By these means she recruited, and was soon able to recommence the carbonate of iron.

June 1st—She began to take it in the same form and dose as at first directed, and repeated the dose at the end of every six hours. In about eight days she was sensibly better, and the discharge per vaginam diminished, became thicker, less acrid, and less offensive. A drachm and a half of the carbonate had been taken every 24 hours without any inconvenience to the stomach

or bowels ; the dose of the electuary was therefore to be increased. She continued to take it without interruption, and in about three weeks she had made considerable progress towards convalescence. The discharge per vaginam consisted for the most part of healthy pus ; the hardness of the os uteri had very much diminished, but it still felt ragged. The quantity of the carbonate taken in 24 hours amounted to rather more than three drachms, and this was to be continued.

The progressive amendment of my patient was uninterrupted ; and the discharge of pus gradually diminishing, entirely ceased about the middle of July, when she was able to ride. She continued the medicine till late in the fall, and had then acquired a tolerably good share of health. For nearly a year, however, after she recovered, her catamenia were irregular, though never profuse.

In the spring of 1811 she became the mother of a healthy child, which she had carried the full time.

CASE III.

In June, 1808, I visited Mrs. S. aged about forty, and possessing apparently a good constitution. She informed me that for some hours she had had severe parturient pains, and that there had been expelled per vaginam a quantity of a substance, of which she could give no account. Ragged pieces of a fleshy substance, accompanied with hemorrhage, continued to come away, the largest, as big as two fingers, and resembled placenta. She presumed she had miscarried, a misfortune to which she had been subjected a number of times before. This, however, was conjecture, she having had for months past irregularly an appearance of blood per vaginam, and constantly a copious running of a yellowish, thick, and fetid matter, accompanied with great weakness of her back, and shooting pains from hip to hip. The hemorrhage had for the most part ceased ; she was desired to keep her bed, and to take the aromatic sulphuric acid to the amount of three drachms in 24 hours.

23d.—Five days after my first visit. More pieces of the fleshy substance had come away with hemorrhage. The yellowish discharge augmented, and was very offensive. She had great

soreness in the hypogastrium; and the pains and weakness of the back were distressing; pulse quick; the labia of the os uteri thickened, hard and uneven. She commenced taking the carbonate of iron in the following form.

℞. Carbonatis ferri - - ℥ij.
Conservæ rosæ gallicæ - ℥j.
Misce, fiat electuarium;

the dose, a piece as big as a small nutmeg, three times in a day. Her diet to consist principally of milk. She followed this plan steadily for one fortnight, and all her symptoms were very much ameliorated, the pains subsided, and the discharge per vaginam was small, and not in the least offensive. After the first week, the dose of the medicine was taken four times in 24 hours. She continued it irregularly some time longer, but not so as to have it ascertained, whether it would entirely remove the complaint.

She went into the country, where, I understood, the disease returned, and in about eighteen months from the time I first saw her, she died. I have not been able to learn what treatment she was under after she left Boston.

CASE IV.

Mrs. R. aged 26, feeble in her constitution, had been for some years, afflicted with leucorrhœa, and occasionally with menorrhagia, to an alarming degree; she was taken on the 10th of July, 1808, with bearing down pains and hemorrhage; some substance was expelled per vaginam, but she did not examine it, and had put it out of my power to do so. She presumed she had miscarried. The catamenia had not appeared for some months, but she had had, constantly, a whitish discharge, and often tinged with blood. I found the os uteri hard and uneven, and it did not appear to be dilated in the least.

11th.—The hæmorrhage did not return, but a soreness in the hypogastric region, and a weakness in the back, which had afflicted her for some time, previous to this attack, were much more distressing. Three drachms of the carbonate of iron were directed to be taken every 24 hours, and her diet to consist principally of milk.

15.—Some blood appeared for the three last days, and she had shooting pains. Medicine continued in the above prescribed quantity. She persisting in taking it for a number of weeks. The symptoms of the disease gradually disappeared, and she regained tolerably good health.

In June, 1809, she became the mother of a healthy child, which she had carried nearly the full time.

ANALYSIS OF THE LABOURS OF THE IMPERIAL INSTITUTE OF FRANCE, FOR 1811.

Translated for the New England Journal of Medicine.

BY JOHN G. COFFIN, M. D.

NATURAL PHILOSOPHY AND CHEMISTRY.

We know since the time of Blake and Wilke, that during the evaporation of bodies a great quantity of heat is absorbed, and that all evaporation cools the body from which it emanates, in proportion to its acceleration; on the other hand, that the pressure of the atmosphere retards evaporation, and that this change takes place in a vacuum the more readily, as the vacuum is more perfect.

Mr. *Leslie*, member of the Royal Society, London, supposed that he should still further augment the effect of the exclusion of air, by placing under the pneumatic machine, substances strongly attracting humidity, which seizing the vapour as it is formed, multiply its production indefinitely; in this manner he produced a degree of cold so rapid and violent as to freeze water in a few minutes, at any season. This is a means of having ice at pleasure, with little expense except the fire required to dry the substances employed to absorb the moisture.

Highly concentrated sulphuric acid and muriate of lime are the absorbents best suited to this purpose.

Two young chemists, Messrs *Clément* and *Désormes*, have attempted to determine the limits of this process, and the degree of economy to which it may be carried; and, by calculating the quantity of caloric contained in the aqueous vapour, and the quantity of coal required to produce a given quantity of vapour, they have ascertained that little more than one part of coal will restore to its former state the absorbent which served to congeal 500 parts of water. Thus 100 pounds of ice would cost but one pound and a few ounces of coal. This effect may be increased by preventing the entrance of any heat from without, which may be done by rendering the receiver a non-conductor of heat; for instance, by making it of two plates of polished metal, separated by a stratum of air.

From this acceleration of evaporation in a vacuum, augmented by the presence of absorbents, we derive a more obvious advantage when the object is merely to dry wet substances, for then we avoid their being subjected to the action of fire, which always alters them more or less.

Our fellow-labourer, Mr. *de Montgolfier*, had contrived completely to dry the juice of plants, particularly that of raisins, by means of the pneumatic pump; and proved that this juice having been dried, on being diluted with a sufficient quantity of water, might be made to ferment, and to produce an excellent wine. But it cost too much labour; while the addition of an absorbent is a substitute for the continued action of the pump.

It is however necessary to preserve the juices from freezing, an injury not less considerable than that arising from heat.

Messrs. Clément and Désormes have discovered a very simple method of guarding against the latter. They inclose the vessel containing the juice to be evaporated, with the absorbing material; thus the heat which is disengaged from the steam at the instant of its absorption, returns to the juice which imparts it, and this circulation furnishes what the new vapour requires.

This process may be conducted with great economy, if we begin by reducing the juice to a syrup, by means of a ventilator, the discovery of Mr. de Montgolfier, and which Messrs. Clé-

ment and Désormes have described in the annals of chemistry, (October, 1810.) The pneumatic pump is not applied till the moment when this ventilator produces no further effect. Every one may conceive the utility for domestic purposes, especially for the navy and army, of this new art of preserving elementary substances, by greatly lessening their weight, and in transporting, in a small bulk, to distant regions, the fermentable matter which is to afford wine and alcohol. The same natural philosophers propose to apply evaporation in the vacuum, to the desiccation of gunpowder, which is done without danger, as it is done without fire. They have also attended to common evaporation by means of fire, and have found a method of doubling the effects of a given quantity of fuel on an aqueous fluid, such as a solution of a salt. It is only necessary to collect the vapour from the first portion of the fluid, and to force it to pass through a second portion of it.

This vapour of very high temperature gives out a great part of its caloric to the new fluid through which it passes, and thus performs half the work.

But of all the arts, that which has derived the most wonderful advantages from recent discoveries relating to heat and vaporization, is the art of distilling brandy; the process just mentioned is merely an imitation of those which have furnished a part of these advantages. This revolution which already exerts a most salutary influence over the prosperity of our southern departments, is due to the late *Edward Adam*, a distiller, of Montpellier. The ground of his process consists in heating a great part of the wine to be distilled, by the steam of brandy which rises from the copper, and to make this steam pass through a series of wetted vessels, in part, through cold water, which causes a deposition of its watery particles, so that the spirit of wine, in a very pure state, is condensed in the last cooler. Thus instead of applying heat at first to obtain brandy at 19 degrees, from which might be drawn afterward by successive heat, spirits of wine of different degrees of strength, we obtain at once spirit of wine of any desired proof.

Beside, the old alembic received but two applications of heat in a day, while this of Adam receives eight; the latter too ex-

tracts a sixth part more of spirit from the same quantity of wine, saves two-fifths of the fuel, and three-quarters of the labour; lastly, the spirit of wine thus furnished has no empyreumatic taste. It is not surprising that these advantages have been promptly adopted by the distillers, for ruin would infallibly attend those who from obstinacy should pursue the ancient method. Mr. *Duportal*, a chemist, of Montpellier, has presented to the class a very exact description of this process, which has been printed, where he points out the improvements in it of Mr. *Isaac Berard.*

It is essential to remark here, that the first idea of heating by steam appertains to the Count of Rumford, foreign associate of the class, who published it in London, 1798. Thus a simple general proposition, which first appeared as a mere abstract truth without use, has enriched whole provinces. The Count of Rumford, who has made so many useful discoveries in natural philosophy, and who has attended particularly to every sort of advantage to be derived from fire, has, this year, presented to the class, many researches on light. After having described different kinds of lamps for decorating apartments, and to be used instead of candles, lamps, and watch-lights, without any of the inconveniences attending the lamps in common use, he has sought to solve this grand problem, on which natural philosophers have so long been divided, namely, whether light is a substance emanating from luminous bodies, or a movement communicated by these bodies to a fluid otherwise imperceptible, and diffused through space.

As a given quantity of a given kind of fuel gives out while burning the same quantity of heat, it ought also, says the Count, to disengage the same quantity of light, if light be contained in it in the same manner that heat is; for those who do not consider heat as a substance, admit that it is a force, a quantity of motion which may be concentrated in a body, and which is evolved in the quantity in which it was retained; as a bent spring expands itself. On the contrary, if light be a motion imparted to the air by burning bodies, its quantity will be proportionate, not to the quantity of fuel consumed, but to the vivacity with which the combustion shall be made, and especially to the time these particles remain heated to a degree suited to their moving the

particles of air. Having made his experiments in conformity to these ideas, both with lamps and wax candles, he found that the heat disengaged in a given time, was always in proportion to the quantity of oil or wax consumed, while the quantity of light furnished in the same time would vary to an astonishing degree, and very much depended on the size of the flame, a size which retards its cooling: a small wick of a night lamp, for example, gives sixteen times less light than a common wax candle, while burning as much wax, and heating the same quantity of water to the same degree. Thus, whatever can support the heat of flame, contributes to augment light, and we may obtain results truly surprising.

The Count of Rumford, who had ascertained by former experiments, that every flame is transparent for another flame, has combined his two discoveries; having constructed some lamps with several flat smooth wicks, placed parallel to each other, mutually guarded each other against the cold; he produced from them a light equal to forty wax candles; and he thinks the intensity to which this may be carried is unlimited, which may be very important in ship lights; because hitherto it has not been possible to carry their light beyond certain limits, for by enlarging the wicks too much with a double current of air, their light would diminish, from causes fully explained in the experiments we have just noticed.

What we said above on the cooling of bodies by evaporation, is a particular case of this law, that every body which dilates absorbs heat, which it gives out again while contracting.

To this law there are some exceptions, some of which have been long known and explained, as that of nitre, which retains in many circumstances, while condensing, a great proportion of heat, whose effects are sufficiently obvious in the combustion of powder; but there are other exceptions whose causes are more obscure; such as that which Mr. *Thillaye*, Prof. at the Imperial Lyceum, has made known.

The mixing of spirit of wine and water is always accompanied with an elevation of temperature, and there is generally a greater condensation than should result from the proportional density of

the two fluids, from which condensation this heat is explained. But Mr. Thillaye has found that when the alcohol is weak, the mixture is so far from being condensed, that it is in truth rarefied, and yet the heat is manifest.

From the tables of his experiments we see that alcohol at the density of 0,9544, begins to give rarefaction. The *maximum* of the effect is seen when the alcohol is at 0,9688 of density, and when it is mixed with once and a half its weight of water; the temperature is still raised two degrees.

The contrary case, that of condensation without extrication of heat, produces detonating substances; a well known instance we have just cited in gunpowder. One of the most terrible is that sort of powder in which is substituted for nitre the oxygenated muriate of potass; it is also one of the most dangerous, for it explodes by simple striking or rubbing.

Some however have thought of using it to prime fusils, for having no need of a spark of fire, its effects would never fail. Mr. Page, a gunsmith, has even invented locks suited to this use. But as the slightest rubbing inflames it, it is dangerous to employ it even in this way.

Messrs. *Bottée* and *Gengember* have endeavoured to find a powder which would retain the power of detonating by a blow or shock, without the hazard of a spontaneous explosion; and after many trials, they found one which answers every desired purpose.

It is compounded of fifty-four parts in a hundred of superoxygenated muriate; twenty-one of common nitre; eighteen of sulphur, and seven of powder of lycopodium. It requires the stroke of the hardest bodies; and, what is very peculiar, that part only of the powder which receives the stroke, explodes; the contiguous particles are inflamed only by communication, but they cause no explosion, so that this powder is absolutely without danger. It is important as it renders easy a process otherwise dangerous.

VEGETABLE PHYSIOLOGY AND BOTANY.

Our fellow labourer, Mr. *Palisot de Beauvois*, has communicated to the class the result of an experiment calculated to extend our ideas relating to the motion of sap. Instead of raising merely a band of the bark round the branch, as is commonly done, he has completely separated a plate of it, by making a notch all round, and in such a manner that its fibres have no more communication with the rest of the bark, neither above, below, nor on the side. He has also removed the liber, and wiped very dry the *cambium*,* leaving nothing untouched but the wood at the bottom of the notch. The edges of this plate of bark, thus insulated, have not ceased to grow, as well as the bark of the external edge of the notch; the plate even has, on some trees, given rise to a bud, which has been fully unfolded. Nothing proves better the general communication of all the parts of the vegetable, and how they can supply each other's functions; for this slip of bark could not draw its sap, except from the wood concealed under it.

In our report of 1806, we made known the opinion peculiar to Mr. de Beauvois, on the fecundation of the mosses, and we noticed at the same time the objections which still prevent many botanists from adopting that opinion, which consists in regarding as pollen, or fecundating powder, the green powder which fills the urn of the mosses, and as seed, another powder which Mr. de Beauvois places under a capsule situated in the axis of this same urn, while *Hedwig* takes the green powder for the seed, and looks for the pollen in other organs; and some later botanists would not admit of sex in these sorts of plants, and consider their powder only as a collection of small bulbs, or buds. Mr. de Beauvois has this year made an observation which seems to him to confirm his opinion.. Having examined with care an urn of the *Mnium capillare*, he found,

* The *Cambium* is a mucilaginous substance, placed between the bark and wood, in dicotyledonous plants. It is considered as the source, or at least the matrix of the new layers of wood and bark; and bears a close analogy to the coagulated lymph of animals. Ed.

first, that the green powder of the urn did not adhere to the central capsule, as it should do, if it were the seed, and if this capsule were a columella, as the followers of Hedwig say; secondly, that there were in the capsule some grains transparent and larger than those of the green powder, or dust; thirdly, that in the green powder itself there were grains of two kinds, some green, opaque, angular, united by fibres; others, transparent, spherical.

Mr. de B. then examining the dust of the lycopodiums, found in them also two kinds of grains; some opaque and yellow, others round and transparent like bubbles of water, at most in the proportion to the first of one to thirty. Mr. de B. who regards the opaque grains as the pollen, thinks these transparent bodies blended with them, are a kind of buds or bulbs, fitted to produce new plants, and that these germinate: while Hedwig and other observers obtained young plants, from sowing the powder of the lycopodiums and mosses; thus these experiments can no longer be opposed to him. As to the true grains, according to him they are situated alike, both in the lycopodiums and mosses; the axillæ of the leaves of the inferior part of the spike conceal, in some plants of the first family, little capsules containing each some grains larger than the powder of the superior capsules, which have been considered as seeds, by Dillenius, and by all those who with him would regard the powder as a pollen.

Mr. Wildenow considers them as a kind of bulbs, and this is the common opinion of those who will not admit the idea of sexes among the mosses, lycopodiums, and other cryptogamous plants.

Mr. de Beauvois finds that these grains possess all the characters of organization assigned to seeds by the most accurate botanists, and that we cannot in consequence hesitate to view them as such, though they have not yet been discovered in all the lycopodiums; that he grants however that he could not make them grow, but thinks this arose from their not being fresh; but although they should vegetate, those who pretend that they are nothing but bulbs, would not acknowledge themselves to be defeated.

We have briefly pointed out in our reports of the two last years, the discussions of our fellow labourers, Messrs. *de Mir-*

bel and *Richard*, on the internal composition of the grains of certain vegetables. As these discussions tend to nothing less than to shake received systems, they assumed a degree of heat proportionate to their importance, and it has seemed to us necessary to give an account of the point to which the question has come. For this purpose we must go back a little. When a kidney bean is put into water, for example, it soon splits, and at the junction of the two lobes which form the greatest part of its mass, we observe, on one side, a little fleshy body, of a conical form; and on the other two small leaves, sufficiently evident.

When the bean germinates, the conical part descends into the earth and forms the root; the two small leaves ascend into the air, thus constituting the extremities of the plant; the two great lobes adhering at the point of union of the two other parts, after sustaining for a time the office of leaves, are shrivelled and disappear.

The little conical tubercle has in botany the name of *radicle*; the part opposite, in its progress forms the entire trunk of the plant, and is named *plumule*, the two lateral lobes are the *cotyledons*. Numerous experiments show that the function of the cotyledons is to furnish the substance necessary for the first development of the plumule and the radicle, till the little plant is sufficiently strong to draw from the earth and atmosphere the juices which are intended for its perfect growth and maturity.

Multiplied observations also teach us that plants with two cotyledons, which are most numerous in nature, have a great number of characters in common among them, and that they differ in their organization from those having but one cotyledon, and still more from those having none; in consequence, botanists have formed from this composition of the small vegetable embryo, the basis of their first division of plants.

Mr. Desfontaines, in a memoir, an analysis of which we gave at the time, seems to have established this division, by proving that the ligneous trunks of dicotyledonous plants have a different internal structure and a different manner of growing from those plants having but one, or no cotyledon. But as it often happens in natural history, especially when fundamental characters rest merely on empirical observations, whose rational affinity to other

parts of the organization is not duly regarded, it has been perceived by slow degrees that these rules were not without exception.

It has been discovered that the seeds of certain plants, which in their whole structure resemble dicotyledonous plants, have either no cotyledon, or more than *two*; exceptions of a contrary kind have also been suspected, and these doubts have led to a more careful examination of the seeds of all plants. Accordingly in this research some have been found whose structure has appeared problematical, in which the same organ has received different names, according to the manner in which each has been inspected.

The *nélumbo* is one of the most remarkable of these uncertain species. It is a plant of the Indies which has a near relation to our nénuphar (*nymphæa*;) its seed conceals a body divided into two lobes at two thirds at least of its height, and between these lobes is a small membranous sack, whence proceed the first leaves, and it is not till the stalk which bears the leaves is a little advanced, that it shoots forth any lateral small roots.

Messrs. *de Mirbel* and *Poiteau*, conformably to a resemblance, at least apparent, have asserted that the two lobes are the two cotyledons; that the first leaves form the plumula, and the sack which envelopes them, a sort of sheath; that the radicle remains inactive without unfolding, and that the fibres proceeding from the small stalk, are analogous to those roots which grow from creeping plants. Mr. Mirbel, in particular, believes he has found, within these lobes, an apparatus of vessels exactly similar to those of the cotyledons, in plants having two cotyledons. These botanists have accordingly ranked the nélumbo among the dicotyledonous plants.

Mr. Richard on the contrary maintains, that this little sack should be regarded as the only cotyledon, and that the two lobes appertain to the extremity of the radicle; he compared these bodies to those observed in other embryos, and to which he has given the name of hypoblasts, the same which Gaertner called vitellus; and this analogy seems to him the more certain, because the lobes in question, like other hypoblasts, do not increase at the time of germination, contrary to the generality of cotyle-

dons. The lateral production of the roots is a natural and general consequence of the presence of an hypoblast, which prevents the radicle from growing in a straight direction. In conformity to this reasoning, Mr. K. has classed the nélumbo among the monocotyledons. The discussion has then turned on the nature of these hypoblasts. Mr. de Mirbel compares what Mr. Richard thus names in the grasses, and which is the *scutellum* of Gaertner, with the cotyledon of the asparagi of the cannæ and some other plants which have but one of them, and he concludes from this comparison, that the hypoblast of the grasses is precisely their cotyledon; which would place on his side all the analogies cited by Mr. Richard. Mr. Poiteau has also written a memoir on this question, in which he coincides with de Mirbel.

Mr. Richard replies, that there is a greater difference than Mr. Mirbel thinks; that the plumule of asparagus and the other plants mentioned is enveloped in the cotyledon; that it passes through it, in order to get out; that it is a character essential to all the monocotyledon plants; that in the grasses, on the contrary, the plumule is enveloped in a tunic, in the form of a cone, distinct from the hypoblast, and that this tunic, enveloping the plumule, ought to be considered as the real cotyledon.

CASE IN WHICH THE OIL OF TURPENTINE WAS EMPLOYED WITH SUCCESS IN TÆNIA.

COMMUNICATED BY DR. JOHN B. BROWN.

B. C. consulted me on account of his son, who had been afflicted with Tænia for six years, and had for that time occasionally discharged more or less of it. He was a lad of sixteen years of age, but considerably under the usual size. His general health appeared not to be materially affected by the disease. I recommended the Ol. Terebinth Rect. and gave him directions to take fasting ℥iss. at 7 o'clock, and ℥i at 9 o'clock the

preparations of this metal in fact have been commenced in New York ; and the observations of Drs. Seaman and Pascalis, so far as they have extended, appear to confirm the opinion of Dr. Chrestien. However they may terminate, we presume that a brief view of the practice of the French physician, as announced in the last edition of his "Méthode Tatraleptique," published in 1811, and of the preparations of gold which he employed, will not be unacceptable to those who are disposed to ascertain the comparative merits of this metal and quicksilver in the cure of the venereal disease.

Gold may be employed, for this purpose, in the state—1. Of minute division. 2. Of oxide. 3. Of oxide in combination with ammonia. 4. Of oxide in combination with oxide of tin. 5. Of muriate.

The first of these, denominated by the author "or divisé" was prepared by forming an amalgam of gold and quicksilver, and afterwards withdrawing the latter by exposing the compound to the rays of the sun concentrated by a convex lens, to the heat of a fire, or to the action of nitric acid. The gold remained in the form of an impalpable powder.

The yellow oxide of gold was obtained by precipitating it from its solution in nitro-muriatic acid by potash. The manner of effecting this he has not mentioned, and, as it will be seen below, there are some difficulties in the way of preparing it of an uniform strength. The oxide precipitated from its solution by ammonia was soon laid aside from the danger of its spontaneous explosion.

The compound oxide of gold and tin may be obtained by mixing the solutions of these metals, or by adding metallic tin in filings to a diluted solution of gold. He prefers the latter.

The muriate of gold, says Dr. Chrestien, procured by evaporating the solution to dryness, was so deliquescent and caustic that I made but little use of it ; but supposing a muriate with two bases might obviate these inconveniences, I combined the muriate of soda with the solution of gold, and obtained the desired product.

Numerous detailed cases are given in the subsequent part of his work on the effects of each of these preparations, in syphi-

lis. They differ much from each other in activity, the oxides producing more speedy effects than the powdered gold, and the muriate more powerful action than the oxides. They were all administered by the "Méthode Iatraleptique," that is to say, by friction on the tongue, cheeks, or gums. The *or divisé* was thus prescribed to the extent of three grains in a day; the oxide precipitated by potash in a dose of half a grain gradually augmented to two grains; the compound oxide of tin and gold, in rather smaller doses; and lastly, the muriate of gold in the quantity of from one-fifteenth to one-tenth of a grain. On account of the superior activity of the latter, he found it necessary to mix it with certain substances which were capable of diminishing its energy, without abstracting its oxygen. He employed for this purpose starch, charcoal, and lacker (laque des peintres.)

From the variety of cases brought forward by the author to prove the activity and the anti-syphilitic virtues of gold, we collect, that within a moderate time it cures "une chaude-pisse, même cordée," "un phimosis," "des bubons," "des poireaux," "des chancres" "des ulcères de la bouche, du nez, des amygdales, du prépuce et à la gorge," and most of the secondary symptoms of this disease. All this may possibly be true; but our faith is more than staggered even with the history of the cases before our eyes, when we are informed, that it has beside an admirable influence on all lymphatic diseases; that it dries up scrophulous ulcers, dissipates the goitre and swellings of the thyroid gland, restores a schirrus matrix to its healthy functions, arrests the progress of phthisis pulmonalis, favours the solution of existing tubercles, and retards the formation of others.

As this metal may possibly produce the effects the author mentions, on the venereal disease, and is at least worth the experiment, we shall make a few observations on the best mode of obtaining its preparations of an uniform strength.

Gold, in a state of minute division, may be procured with facility, by pouring into a diluted solution of this metal a solution of *green* sulphate of iron; a brown or bluish brown powder will be precipitated, which is metallic gold minutely divided.

The best proportions of the acids to dissolve this metal, according to Vauquelin are, two parts of muriatic to one of nitric acid.* Potash and soda, and their carbonates, do not decompose the solution at common temperatures; they merely give it a deep red colour with a little turbidness. "A red substance of a bulky floculent form" is precipitated from the fluid by the aid of heat. The remaining liquid is nearly colourless, but reassumes the colour of a solution of gold on the addition of muriatic acid, and green sulphate of iron throws down the metallic gold; hence all this metal is not precipitable by potash, and from the experiments of M. Vauquelin it appears that nearly one third of the gold remains in solution after the action of the alkali, which he supposes is in consequence of its forming a triple muriate of potash and gold, on which the alkaline substances produce no effect.

The red substance when dried has the appearance of dried blood. It has a styptic metallic taste, and is slightly soluble in water. It is inferred to be a compound of oxide of gold with a minute portion of muriate of gold.

"To precipitate the greatest quantity of oxide from its solution by means of the alkalis, we must manage so that no useless acid shall remain in the solution, in order that less of the triple salt may be formed; this is effected by evaporation to dryness, very cautiously conducted," the product being again dissolved in distilled water.

The compound oxide of gold and tin, or the purple powder of Cassius, may be formed either by adding the solutions of tin and gold much diluted to each other, or by immersing metallic tin in a diluted solution of gold. It is so difficult properly to prepare the solution of tin, so as always to produce the same colour and the same relative proportions in the component parts of the precipitate, that the latter method is preferable; the neutral solution of gold being diluted with one hundred parts of distilled water, and metallic tin being added to it. The precipitate is probably the oxide of tin at a maximum, and the oxide of gold at a minimum of oxygen, with a small proportion of metallic

* Philos. Jour. vol. 30. p. 249.

gold. Dr. Chrestien supposes it contains muriate of tin. The formation and preservation of the muriate of gold is a work of some difficulty. The evaporation of the solution must be very carefully conducted; for the affinity between this metal and oxygen is so slight, that a moderate degree of heat is sufficient to overcome it. When therefore the temperature is high, the muriate will be decomposed, part of the gold will appear in the form of purple oxide, and part in its metallic state. When properly prepared, it has a strong attraction for moisture, it soon deliquesces, and becomes soft and even liquid.

The preparations of this metal were administered by Dr. Chrestien by friction; but if we reason from analogy, more positive effects might be supposed to follow from its being taken internally. No difficulty would be experienced in preparing the oxide for this purpose; and the muriate might, with equal facility, be exhibited either by forming a triple muriate in the liquid form, or by dissolving the muriate of gold in a given portion of distilled water. A series of experiments on the anti-syphilitic powers of these preparations has been instituted, and their results will be communicated in a future number.

REVIEW.

ARTICLE VI.

An Essay on the disease called Yellow Fever, with observations concerning Febrile Contagion, Typhus Fever, Dysentery, and the Plague, partly delivered as the Gulstonian Lectures, before the College of Physicians, in the years 1806 *and* 1807. *By Edward Nathaniel Bancroft, M. D. Fellow of the Royal College of Physicians, Physician to the Army, and late Physician to St. George's Hospital.* London; T. Cadell and W. Davies. 1811.

(Continued from page 193.)

The second problem discussed in the second part of this work is the following.

"Can a Fever, strictly contagious, be generated by an accumulation of filth, or of putrefying, or putrid, matters, or by the crowding of healthy persons into confined, or ill-ventilated, and unclean places?"

On these questions Dr. B. takes the negative side. However respectable the authorities, and however common and well established the opinion in favour of the affirmative, he thinks that facts will support his conclusions. He brings forward a mass of evidence, and proves incontestibly, if *the evidence* be not disputed, that fever is not produced by the circumstances enumerated above; and that those circumstances alone cannot be considered as causes of fever, much less of contagious fever.

For instance, he shows that even bodies dead of the plague, left to putrefy on the open ground (p. 117) or after having remained for weeks in the houses where death had taken place (p. 637) did not excite in persons fully exposed to them disease of any sort. Again he shows that, on shore and at sea, men have been, in repeated instances, and at different seasons, crowded and confined under circumstances the most unfavourable to health, but that fever has not been produced. We cannot pretend even to enumerate the instances of this sort, which he re-

lates. One thing however particularly worthy of remark, is that he denies that the French have found their hospitals and camps infested by çontagious fever, which they ought to be as much as those of the English, if the common opinion were correct.* The following statement will show how liable the Parisians in one of their great hospitals ought tò be to this disease, if it can be produced by the causes specified in the problem.

"I shall place in Appendix No. 5, certain parts of a large volume in quarto, entitled "Mèmoires sur les Hopitaux de Paris, par M. Tenon, Professeur Royale de Pathologie, &c. imprimés par ordre du Roi," (1788;) by which it will appear that the Hotel Dieu, of Paris, is not only the largest, but the most *crowded and filthy hospital on earth;* that a single building thereof, called 'Batiment Meridional' generally contains two thousand six hundred and twenty-seven patients, crammed together, from four to six in each bed, with every circumstance and degree of nastiness, and deficient ventilation, so that if such causes could have generated contagious fever, it must have been *there* generated nearly two centuries ago; and being once generated by them, it must, from their continual aggravation, have been constantly maintained, and spread to a greater extent, and with increasing virulence."

It appears however that this disease is nòt known in that hospital.

If the evidence adduced by Dr. Bancroft be not disputed, it seems impossible to believe that contagious fever is produced by filth, putrid matters, or deficiency of ventilation. But what is the origin of this fever? It is agreed that there is a fever which spreads in jails and hospitals among persons exposed to it.

Dr. Adams says† that "sickness *of any kind*, where numbers are accumulated without proper ventilation, will generate that *atmosphere*, which excites hospital, camp, or prison fever." He thinks it important not to confound the fever with the cause that excites it; which cause he denominates an *infectious atmosphere*. That the fever will not reproduce its kind by any neces-

* We could easily produce evidence of the existence of contagious fever in France; but unfortunately the writers whom we should quote express themselves in such a loose and vague manner on the characteristics of such diseases, that we cannot place confidence in them.

† Inquiry into the Laws of Epidemics.

sary and direct agency is shown, as Dr. A. believes, by this circumstance, that when a person affected with it is placed in a large and well-aired apartment, he does not communicate the disease to his attendants. If this distinction really exist, this fever certainly differs very materially in its character from contagious diseases.

Dr. Bancroft's evidence, if not contested, seems to overthrow the opinion of Dr. Adams in respect to the mode in which the disease is generated; but the former does not any where disprove the justice of the distinction above referred to, viz. that although the disease under consideration is communicated in crowded and ill-ventilated apartments, it is not communicated in those, which are of an opposite description. Dr. B. gives his opinions respecting the disease under consideration most fully in the 1st chapter of the 5th part of his book; to which therefore we will now advert, though out of course.

He there appropriates to this disease the name of typhus. He objects to the vague application of this name to various fevers, produced by many, and some of them trivial causes, and he adopts the definition of it given by Cullen. With that great man he believes the disease to be contagious. But he goes farther, and limits the disease more than Cullen thought of doing in his definition. Dr. B. considers typhus a contagious disease; and that the contagion is sui generis, as much as that of small-pox, or measles. His opinion respecting contagious diseases are the same as those of the most correct pathologists of the age. On the origin of such diseases no one has been able to throw any light. Dr. B. conceives that they could not possibly have arisen from any casual combination of circumstances; and he refers the origin of each of them to an express mandate of Deity, similar to those by which the diverse races of animals and of plants were brought into being.

It is obvious that our author has formed his opinions respecting contagious diseases from observing the laws of those which are universally acknowledged, such as small-pox, measles, &c. He does not show us that his observations on typhus* would

* We shall use this term in our author's sense.

have led to the same opinions ; nor even that those observations accord with these opinions. He sees in typhus some resemblance to the contagious diseases, and he supposes that it must be similar to them in all its general characteristics.

Let us then see how far this similarity does really exist, and for this purpose let us examine the characteristics of typhus as given us by Dr. B.

First, we are told that typhus is a disease of cold weather* and cold climates ; and that heat will mitigate and finally extinguish it entirely.

"Nothing can be called contagion, says Dr. Adams, unless the person affected by it can induce a similar disease in others, without regard to *season*, *climate*, or any local circumstances."† This distinction we conceive to be well-founded. If others choose to extend the use of the term contagion more widely, we must then seek for some new term to supply its place. We would not dispute about words ; but we say that there is a class of diseases which resemble each other in possessing a property of the character above described ; and if typhus, without this property, is called contagious, those diseases must be distinguished by some other epithet.

Cold, according to Dr. B. favours the extension of typhus, and persons from warm climates, especially if they have always resided in such climates, are particularly liable to this disease. (p. 511.) Has not this contrast between typhus, (Dr. B's typhus,) and yellow fever ever raised a doubt in his mind respecting the contagious property of the former ? The latter disease is, as we know, and as Dr. B. states, the disease of warm weather, and persons from cold climates are particularly liable to it.

* Dr. B's assertion that typhus rarely if ever prevails during summer in G. Britain might be controverted, and on authority no less than that of Dr. Willan (Reports of Diseases.) But, as we doubt whether the disease which he describes ever occurs here, we shall not attempt a decision on the subject, but wait to see the observations respecting it among the English. We think that even the accurate and classical writer just named wants his usual precision, when treating of this subject.

† On Epidemics, p. 19.

"It [typhus] manifests no disposition to remit, unless the patient has imbibed marsh miasms." p. 512.

If typhus is a contagious disease, sui generis, like small-pox, would its character be modified by the influence of *marsh miasms?* Would a hybrid disease be induced by such a cause? Is the same thing ever noticed in any of the exanthematous diseases?

From p. 513 we learn that relapses occur in typhus, though much less frequently than in marsh-fevers. Would this happen if Dr. B's opinion were correct? Do relapses ever occur in cases of small-pox, or of measles, or in any of the acute contagious diseases?

In page 514 and the following our author inquires what is the interval from the time of exposure to the febrile contagion, to the time of the attack. He concludes that this interval is uncertain; and that sometimes it is of several months duration. He thinks that the disease may be obviated by the powers of the constitution, if a summer ensues soon after the infection has been received. He also believes that a robust young man, if temperate, may "not only resist for a long time, but finally overcome such a portion of infection, as in most cases would have soon occasioned disease." p. 517.

In these respects does Dr B. find any similarity in typhus to the contagious diseases? or rather, does he not see a remarkable dissimilarity?

There is one other circumstance in respect to typhus, which occurs to us, and which we presume Dr. B. would admit, although he had not any occasion to notice it. This is, that typhus, like marsh-fever, may be brought to an early termination by medical treatment, in the same manner as marsh-fevers. Can any thing like this be done after the constitutional affection has commenced in those diseases, which are acknowledged by all to be contagious?

If the considerations, to which we have adverted, be not sufficient to disprove the similarity between typhus and the contagious diseases, they are sufficient at least to raise doubts. We are sensible that the subject is a difficult one, and we pretend not to throw light on it. We are endeavouring only to guard

our friends from the effects of false lights. The questions and the points, on which observations are to be made, are now getting to be well understood; and we doubt not that since the matter is under the consideration of men so able as Dr. Bancroft and Dr. Adams, it must ere long be more fully elucidated. We are aware that these questions have often been agitated before our day; but this has been chiefly by men, who thought of occult qualities, and were not the true followers of Bacon.

Part third treats "of the causes of yellow fever."

"The Creator of the World, for purposes which it is our duty to respect as wise and good, has so constituted the surface of the earth, that, in a great part of it, the soil, when moistened and assisted by suitable degrees of solar heat, is naturally disposed to produce certain vapours or exhalations, technically denominated *marsh miasmata*, and possessing a specific power of exciting fever in the human body, which fever, though most frequently intermitting or remitting, is a great cause of mortality, especially in hot climates."

The author does not calculate upon opposition to this statement, and only refers to some of the evidence furnished by writers of the first reputation. He goes on to inquire concerning the "origin, nature, and constituent principles" of these miasmata. He first examines the opinion advanced by Fordyce and others, that pure aqueous vapour may be the cause of fever; and after closely investigating the positive evidence in favour of this opinion advanced by Fordyce, and some important negative evidence from other sources, he concludes that this opinion is erroneous.

Dr. B. attempts to ascertain what it is in the exhalations from marshes, which produces fever. He shows what are the ingredients of a marsh, and what are the known exhalations from it; but he is unable to show to which of the matters exhaled fever is owing. He thinks the noxious matter may possibly be some "miasm," which it is as impossible to detect, when mixed with atmospheric air, as the contagious matter of small-pox or measles in the same situation. But Dr. B. thinks it most probable that the "marsh miasmata" arise from the decomposition of vegetable matters; in support of which opinion he adduces instances of fever produced by rotting flax and hemp in ponds

and stagnant waters surrounded by high grounds, so that they were not exposed to the wind.

These vegetable substances require for their decomposition heat, exposure to the air, and moisture. Hence fevers are produced from such sources, first in warm weather and in hot climates ; second, in dry seasons, in those places where the water is usually in such abundance as to cover the vegetable matters so as to prevent rapid decomposition ; and third, in wet seasons, in places where the soil is not ordinarily so moist as to favour such decomposition.

The author believes that great heat operates in two ways in producing violent fevers. First ; in proportion to the heat of the atmosphere, until it exceeds 100°, the decomposition is more rapid. Second ; heat has a direct operation on the human body, by which the violence of fevers is augmented ; and, as he afterwards shews, this operation is greater the more vigorous the subject, and the less he has been accustomed to a warm climate, or the less constantly, or less uniformly he has been accustomed to warm weather.*

The author, noticing that the yellow fever has prevailed mostly in seaports, or in towns accessible to shipping, is led to suspect that the miasmata in such places may differ in *quality*, as well as in the degree of concentration, from the exhalations of common marshy grounds. This difference may be owing to the greater heat in places thickly settled, or to a difference in the organized matters exposed to decomposition in such places.

Having collected many proofs in support of the orthodox opinion that marsh miasmata cause fever, Dr. Bancroft inquires to what distance from their source the operation of these miasmata extends. He states many facts from which he infers that the distance is very small. First, horizontally, he thinks that the exhalations never extend their effects more than half a mile ; while

* Thus in our northern and middle states, though our summers are very warm, yet as we have long intervening seasons in which the weather is cold, we are much in the same situation in summer, as are the residents in the temperate zone, when visiting the countries nearer the equator.

frequently their influence is limited to a few rods, and even to a few yards. It has often been observed in Rome and other cities, that an epidemic fever has been confined to certain streets, and even sometimes to one side of a street.*

It also appears that the perpendicular extent of the marshy exhalations is extremely limited ; so much so, that men sleeping on the ground floors are much more frequently taken sick, and have been more severely affected, than the tenants of the upper stories.

Dr. Bancroft next remarks that fevers are much oftener contracted during the night, and especially during sleep, than in the day ; and he supports this opinion by facts and authorities.

Some of the conditions, under which marsh miasmata operate on the body, being thus ascertained, our author proceeds to inquire how long after their application they commonly produce fever, and how long an interval may occur between such application and its sensible effect. In the following paragraph his opinions are summed up.

" From all these facts it may be inferred, that by differences either in the quantity or quality of the noxious exhalations of marshes, their operation, as a cause of fever, is liable to great varieties, in regard to its celerity, or the length of time in which disease actually appears ; which is sometimes within twenty-four hours, and sometimes not until six, eight, or even nine months have elapsed, and then only when assisted by some accidental or exciting cause. The *longest* periods, so far as I can discover, have occurred exclusively in cold, or temperate climates ; the shortest, only in the hotter ; and in general there seems to be some foundation for believing, that, *cæteris paribus*, the disease will be most violent in those cases where it appears soonest after the morbid cause has been applied to the body ; and that the rapidity of its production, will be in proportion to the quantity and concentration or force of the noxious miasms ; differing in this respect from the small-pox, and some other specific contagions, whose morbid influence, together with the mildness or severity of the disease resulting from it, seems to depend *exclusively* upon the *state of the body*, in which it is exerted, and the treatment of the patient in regard to temperature, diet,

* A similar circumstance was noticed in this town in the year 1802, when the yellow fever prevailed in a small district of the town.

&c. &c. and not upon either the *quantity* or *quality** of the contagion, producing the disease."

We confess that our minds do not feel prepared to yield a full assent to this doctrine. If causes may act so long after their application, it would seem almost impossible in many cases to arrive at any certainty in the investigation of the causes of disease; for it becomes necessary that we know the exact history of a man's life for a year previous to the time when he becomes sick. Yet as the facts stated by Dr. B. occurred in large bodies of men, not in detached individuals, it is difficult not to give to them very considerable weight. The only question is, whether these men had not been exposed more recently to some causes of disease, which had eluded observation.

The author next discusses the causes of the remarkable susceptibility of the disease in persons going from cold to hot climates, and of the want of that susceptibility in the permanent residents in hot climates. But our limits will not permit that we should proceed in our minute analysis, and we must hasten to dismiss this work, however valuable.—Of the remainder therefore we will only give a very general description of the contents.

In p. 281 Dr. Bancroft arrives at the following conclusion respecting the character of yellow fever.

"This seems to be the '*irregular* semitertian' of Dr. Fordyce, in which, according to his Statement, (4th Dissert. p. 61, &c.) 'the hot fit is frequently prolonged, so as to leave no other mark of an intermittent to distinguish it from a continued fever, excepting the exacerbations not taking effect in the evening.' He concludes, however, that it is not a continued fever, from an agreement of all those who have had, or have seen, or have treated the disease, in the following observation. 'It happens often, that a patient apparently becomes greatly relieved, and appears in a state as if he were recovering, when, all at once, a fresh attack takes place, and carries him off.' This, he adds, 'is the most *formidable* disease incident to mankind. It has *frequently been called the plague.*'"

It is the purpose of the fourth essay "to exhibit a summary statement of the principal facts regarding the history of the yel-

* This is contested, as to quantity by Fordyce, and as to quality by Adams.

low fever, in different parts of Europe and America, and regarding its manifest connection with fevers notoriously originating from marsh effluvia." In this part the author endeavours "to establish the identity, or near affinity of the yellow fever with the fevers which are indisputably and notoriously produced by marsh miasmata."

This portion of the work is highly interesting, but it could not be reduced to *a more* "summary statement," at least not to such as our pages could admit. In this part, and in the appendix, the question whether yellow fever be contagious is very fully discussed; and there is such a mass of evidence on the negative side of this question, as will leave very little room for doubt in the minds of unprejudiced judges.

The fifth part contains three chapters. The first, on typhus, we have already referred to. The second is on dysentery. Dr. B. adopts the opinion that this disease arises from the same cause as remittent and intermittent fevers, viz. marsh miasmata. He does not believe the disease to be contagious. In this chapter he quotes with great respect from the New York Medical Repository, a very excellent paper written by Dr. William Buel, of Sheffield, in this Commonwealth.

The third chapter is on the plague. But we have occupied so much room on the diseases most interesting to us, that we cannot stop to notice this. Nor will our limits permit us to state the contents of the appendices, which contain much valuable matter.

The work before us contains eight hundred pages, and is not written in a diffuse style. Our review therefore has pointed out only a very small proportion of its contents. It embraces a most valuable collection of facts, well arranged, clearly stated, and candidly discussed. It is a work which we recommend most warmly to our brethren, and indeed to all who feel an interest in the important subject on which it treats. We hope shortly to see an edition of it published in this country.

If in some instances we have controverted the opinions of the author, we have in very many more passed over opinions, which we highly approve, because we have not room to notice them. Should it be asked why we rather stopped to dispute than to

commend, we answer, not because we feel any delight in opposition, nor because we were insensible of our inferiority to the ingenious author; but because we wished to call the attention of the public to points which are doubtful and require further elucidation.

ARTICLE VI.

An Inaugural Dissertation on the medical virtues of the white oxide of Bismuth, &c. submitted to the public examination of the Faculty of Physic, under the authority of the Trustees of Columbia College, in the state of New York, &c. for the degree of Doctor in Physic. By Samuel W. Moore, A. B. New York; 1811. pp. 39.

In this pamphlet is related, in a modest manner, all that has hitherto been published, together with the results of Dr. Moore's own experiments on the medicinal properties of the oxide of Bismuth. The American public will feel itself indebted to this gentleman for his attempts to introduce into more general notice a medicine, which in some of the principal affections accompanying dyspepsia, is perhaps superior in operation to any of the class of permanent stimulants most usually prescribed. The action of this substance on the stomach is that of a mild and effectual tonic; and from our own experience of its virtues, we do not hesitate to affirm with Odier, Marcet, Bardsley, and Moore, that in pyrosis, cardialgia, and more particularly gastrodynia, it operates more speedily and with more certainty, than any other article of the materia medica. In the course of the last five years, we have frequently prescribed it in these forms of dyspepsia with almost uniform success; and although a medicine possessing such active properties might be supposed occasionally to produce some unpleasant effects on the system, we have never known any injurious consequences to result from its exhibition. A substance which discovers such qualities ought to be

more generally known and more frequently administered; for even on the supposition that it is capable of producing no greater effects than those of the medicines usually prescribed in these complaints, its use will be attended with the advantage of discarding, in some measure, from practice, the long continued employment of alcohol and bitters, which ultimately lessen the activity of the digestive organs, and either prolong or perpetuate the disease they were intended to relieve.

The white oxide of Bismuth is prepared for medicinal purposes, by pouring water into a saturated solution of this metal in diluted nitric acid, a decomposition is immediately effected, a white ponderous substance is precipitated, which is afterwards collected and dried. As the nature of the precipitate and the purity of the medicine are influenced by the relative proportion of the two fluids, the whiteness of the oxide, which is considered as the criterion of its goodness, depending in a great measure on the quantity of water employed in this decomposition, we shall here insert the process recommended by the author for that purpose.

"The bismuth to be dissolved should be previously reduced to powder in an iron mortar. Let three parts of nitric acid for one of bismuth be diluted with an equal weight of pure water. To this menstruum contained in a glass vessel, add the bismuth at intervals, and let it stand till it is all dissolved. Let the clear solution be decanted from the sediment, and a few ounces of it be poured into a glass vessel, capable of containing half as many gallons as there have been measured ounces put in; the vessel is then filled with pure (*distilled*) water, when a copious and perfectly white precipitate will be instantaneously formed, giving to the liquid the appearance of milk.

"After this has subsided, the clear fluid must be decanted, and fresh water thrown on the precipitate to wash it. This operation must be repeated several times, till no acid taste is discoverable in the decanted water. This precipitate, which is pure white oxide of bismuth, should be suffered to dry without heat, or indeed light, for the attraction between oxygen and bismuth is so weak, that if the oxide while drying be exposed either to a moderate artificial heat, or the direct rays of the sun, it parts with a portion of its oxygen, and loses its whiteness."*

* It is questionable whether the term oxide be equally correct as that of sub-nitrate applied to this precipitate. If the results of the researches

Having thus given the process for preparing this medicine in a state of purity, Dr. Moore proceeds to the history of its introduction into practice, and to the diseases to which its exhibition has been confined.

It appears that its medicinal uses were first made public by Dr. Odier, of Geneva, who published a memoir on the subject in the volume of the Journal de Médicine for 1786 They were afterwards cursorily adverted to in the Medical and Physical Journal for 1799, and more fully described in a paper inserted in the 6th volume of the Memoirs of the London Medical Society, by Dr. Marcet, physician to Guy's hospital. A year or two after this, Dr. Bardsley, of Manchester, published his "Reports," and among other cases records the salutary effects of this medicine in the various forms of dyspepsia.

"The particular affections," says Dr. Moore, "to the relief of which this medicine appears peculiarly applicable, are those diseases of the stomach, which proceed from want of tone in its muscular fibres, and more particularly spasmodic pains in that organ;" and farther on, "Bismuth appears to have a local operation on the stomach in relieving spasm and counteracting a

of Berthollet on the forces of affinity be considered correct, and they appear to be adopted as such by many chemists, it will follow, that as a portion of the nitric acid is abstracted by the water, or as the proportion of oxide is augmented, the affinities of the remaining acid and the oxide will become more effective, till at length they may come to balance the force exerted to separate them, and the decomposition of course will cease, before the whole of the former is withdrawn. A sub-nitrate therefore will be produced; or perhaps it may be explained on the supposition that, by the effusion of water, the salt is divided into two portions, a super-nitrate remaining dissolved, and a sub-nitrate being precipitated. The latter of these opinions appears to be confirmed by analogy. Some other salts, as the nitrate of antimony and nitrate of quicksilver, made at an high temperature, and a few of the metallic sulphates are decomposed by the addition of water, and the precipitate consists not of a pure oxide, but of a sub-salt, or of oxide still combined though not saturated with the acid.

In a medical point of view it is perhaps of little consequence whether we regard this article as an oxide or a sub-nitrate of bismuth; but it is of some importance in pharmaceutical nomenclature, that we should approach as near as is possible to chemical precision.

disposition thereto, quite peculiar to itself, and not hitherto derived from any other metallic substance with which we are acquainted : and in cases where there is a disposition in the stomach to generate acid, the oxide of bismuth has the property, by giving tone to that organ, to effect a permanent cure when alkalis and absorbent medicines produce but a temporary relief." The usual dose in which this substance is prescribed is five grains twice or thrice a day, mixed with any convenient vehicle, such as gum tragacanth, gum arabic, sugar or starch, in the proportion of one grain of the oxide to four or five of the powder of either of these substances.

For those of our readers, who have not had an opportunity of of perusing the cases brought forward by Marcet, Bardsley, and Moore, to prove the efficacy of this medicine in chronic debility of the stomach, we shall take the liberty of extracting from the work under review an abstract of a case from each of these authors.

Page 20. "Dr. Marcet prescribed the oxide first in the case of a woman, who, probably from her sedentary occupation, had for two months preceding been afflicted with a very troublesome dyspeptic affection, where no matter either solid or fluid was swallowed without exciting pain at the pit of the stomach, followed by sickness and vomiting ; 'in short,' says he, 'it appeared from her account that only an extremely small portion of the nourishment which she took could be transmitted to the alimentary canal.' This patient, for a month, made use of such tonic medicines as were thought best adapted to her complaint, without deriving from them any sensible benefit."

"Dr. Marcet ordered that she should take five grains of the oxide three times a day, with fifteen grains of the compound powder of gum tragacanth. At the expiration of a week from the time she began its use, she said, 'she was almost quite well,' and begged to have 'some more of the powders that had produced such remarkably good effects.' At the end of another week she declared herself free from complaint."

Page 23. "The first patient for whom Dr. Bardsley prescribed the oxide of bismuth was a man who had become dyspeptic, probably from the intemperate use of ardent spirits. He was troubled with gastrodynia, frequent eructations, heartburn, griping, and alternate costiveness and diarrhœa. He twice became better, though at no time free from complaint, and each succeeding attack was more severe than that which had pre-

ceded it. Dr. B. having at length met with Dr. Marcet's paper, prescribed five grains of the oxide with twenty-five grains of gum tragacanth, to be taken three times a day. This patient found considerable relief after taking nine doses. In nine days from the time he commenced its use, he was almost well, except some degree of anorexia, with a slight diarrhœa; to relieve the last symptom, gum kino and opium were given with the oxide, and in a short time he was restored to excellent health."

From the original cases recorded by Dr. Moore, and which were immediately under his observation, we shall insert the following.

"CASE II.

"NEW YORK, SEPT. 9, 1810.

"Mr. D—, aged 45, has for the last three years been afflicted with cardialgia, attended with extreme flatulence; he has at no time during this period been free from these complaints. He has frequent acid eructations, which he says are also very acrid, occasioning his throat to feel as though it had been scalded; sometimes also, though rarely, he is sick at his stomach, and vomits up matter having the colour of coffee-grounds. He has a number of times taken emetics, and since the commencement of his complaint has been in the daily habit of taking magnesia, from the use of which, although he has sometimes thought it afforded him temporary relief, it is pretty evident from the continuance of the disease, that very little permanent advantage has resulted.

"During the last winter and spring he had occasional attacks of severe gnawing pains at the pit of the stomach, which warm applications would [illegible] commonly in the course of fifteen or twenty minutes, relieve. Throughout the summer he has been generally free from these spasmodic pains; but for the last eight or ten days they have attacked him much more severely, usually returning three or four times a day. These attacks are very violent, occasioning great anxiety, succeeded by insufferable pain, throwing him immediately into profuse perspiration. The warm applications, from the use of which he had on former occasions found benefit, at this time afford him not the slightest relief.

"For the last two months he has been making use of very strong bitters, and I think it probable he has injured his stomach by the large and frequently repeated doses which he has taken. A very sparing use either of spirituous or fermented liquors never fails to increase his cardialgia. His bowels are quite regular, and his pulse feeble.

"Mr. D— at this time sent for my father, who directed him to take, three times a day, five grains of the oxide of bismuth, combined with an equal weight of refined sugar, and twice its weight of starch.

"Sept. 11. He has had no return of the pain in his stomach since he commenced the use of the oxide, but feels well enough to-day, to take a ride into the country.

"Monday morning, Sept. 17. He still continues free from the spasmodic pain of his stomach ; his cardialgia, though not well, is better than it has been hitherto. He has taken none of the bismuth since the morning of the 13th, when he took the twelfth and only remaining dose he had ; and being out of town, he had it not in his power to obtain another supply until his return to the city to-day.

"Monday evening. He had this afternoon a return of that distressing anxiety which has always hitherto preceded his attacks of pain in the stomach. Fearing he was about to have another attack, and placing full reliance on the oxide, from his experience of its efficacy, he sent immediately for a supply of it; but before the person returned with the medicine he had taken forty drops of laudanum ; he however took directly a dose of the oxide, and the pain did not, as he expected, succeed ; but as he had taken laudanum previously, we should not be justified in attributing to the bismuth alone the disappearance of his unpleasant symptoms.

"Wednesday, Sept. 19. Our patient has not since had any return of the spasms ; the cardialgia is infinitely less troublesome. I gave him to-day twenty-four doses of the bismuth, each containing six grains of the oxide, directing him to take one three times a day.

"Sunday evening, Sept. 23. Mr. L—— is now free from all complaint. His heartburn, which was very troublesome till he began taking the bismuth, does not at present appear, unless it be brought on by the use of wine or brandy ; he can, however, drink moderately of West India spirits or gin, without experiencing the least inconvenience by so doing. On Thursday last, after riding twelve or fourteen miles, he began to feel some pain in his stomach, but was immediately relieved by taking his customary dose of bismuth."

The appendix, which terminates the essay of Dr. Moore, is composed of extracts from various periodical works and others, all tending to confirm the high opinion he has advanced of the medicinal efficacy of the oxide of bismuth.

In the multitude of dissertations which annually issue from the schools of medicine, we do not expect to find that originality of observation and that display of new and useful facts, which are the results only of an habitual discrimination, of unwearied industry, and of extensive clinical experience. Such productions are generally written more with an intention of showing to the professors that their authors are well versed in the medical clas-

sics than with the expectation of adding much novel matter to the fund of medical information. As the operation of the oxide of bismuth had been sufficiently demonstrated in the cases of Marcet and the "Reports" of Bardsley, the dissertation of Dr. Moore would have been rendered more interesting and perhaps more useful, by confining his experiments to its effects in cases analogous to the diseases, for the cure of which it was already celebrated; and it is probable that such cases he might have had at his command in the sphere of his father's practice. The effects following its exhibition in a case of menorrhagia by Dr. Stringham, and in the peculiar state of the stomach common to the different periods of gestation, by Dr. Post, will, we have no doubt, induce Dr. Moore to extend his researches still farther, and to ascertain all the medical properties of this useful substance. This dissertation we consider as a very respectable production; the subject is important, and much industry appears to have been exercised in the collection of its materials.

ARTICLE VII.

An Essay on the organic Diseases and Lesions of the Heart and great Vessels. From the Clinical Lectures of J. N. Corvisart, first Physician of their Imperial and Royal Majesties; officer of the Legion of Honour, honorary Professor of the School of Medicine of Paris, and of the Imperial College of France; Physician in Chief of the Hospital of La Charité, &c. &c. Published, under his inspection, by C. E. Horeau, Doctor in Medicine, Surgeon of the Infirmary and House of the Emperor and King. Hæret lateri lethalis arundo. Virg. Æneid. Translated from the French, with Notes, by Jacob Gates, M. M. S. S. Boston; Bradford and Read; 1812. 8vo. pp. 344.

In this quarter, the subject of organic affections of the heart has received great attention for a few years past. It was first

introduced to our notice by a paper published by the Massachusetts Medica Society, in which the labours of Corvisart were adverted to. Since that publication this book has been received among us, and it has here acquired its English dress.

It should be noticed, that although this is Corvisart's work, it was not written by him; a circumstance which we lament; as it is almost impossible for one man to express the sentiments of another in a style perfectly clear and unrestrained. If any faults have arisen from this cause, we cannot expect to see them corrected in a translation.

Although the subject of diseases of the heart has been heretofore ably treated, especially by Senac and Morgagni, yet very much remained to be learnt when Corvisart took it up. In France and Germany this subject had received more attention than in Great Britain; for it is very remarkable that, while in modern days almost every other disease has given rise to volume after volume among the English, those under consideration have scarcely been noticed by them, except perhaps in collections of cases and medical histories.* While the anatomy of the heart and the uses of its various parts have been as well, or perhaps better understood than those of any other other organ, its diseases have passed comparatively unobserved; and even while many great men, and great medical men too, have been suffering and sinking under the ravages of those diseases.

"If I am not deceived," said Corvisart, "such a work must throw great light upon a class of diseases very little understood, though quite frequent; it must manifest the numerous mistakes which have been committed by a vast number of physicians, both ancient and modern. It is clear that the majority of the individuals, reputed to have died of anasarca, leucophlegmatia, and particularly of hydrothorax, and of various species of asthmas, and singular dyspnœas, may have perished from diseases of the heart."

* The papers of Ferriar on this subject are certainly very valuable. Since the publication of Corvisart's work, there have appeared two very valuable papers in the Med. Chir. Transactions, one by Mr. Abernethy, and one by Mr. Dundas, and likewise a treatise by Burns.

In the editor's preface and a preliminary discourse, the great importance of organic diseases is well displayed. It is undoubtedly true that many diseases depend on general deficiency or excess, or on other errors of action in the vascular system. But those who believe all diseases to depend on such errors, are most woefully deceived. Their delusion is yet greater who believe that all diseases depend on certain states of the whole system. In most of the serious and alarming diseases, to which we are subject, there is some one organ undergoing changes of structure; and the danger arises from the derangement produced by this failure of one part of the machine. Among acute diseases, by which the larger part of mankind are destroyed, some one great and important organ is found to have suffered in a very large proportion, perhaps we may say in more than one half of their victims. In these cases it is of great importance to advert to the local derangement, and by early and vigorous measures to prevent that injury or destruction of parts, by which death is produced.

But it is in chronic diseases that we should most sedulously examine each part, as well as the whole, to find the origin of the disorder. These diseases are too easily and too commonly referred to chronic weakness, or general debility; to a feeble, or an exhausted stomach; or to nervous irritation. Although these may be the common effects of most chronic diseases, their first causes will be found to consist in some changes of structure, or in mechanical obstructions, whereby the due performance of the functions is interrupted or prevented. In some minute part there takes place a slight disease, by which a change of structure in that part is induced, while the general health is unimpaired. This disease is such as might occur in the same degree and to the same extent in most parts of the body, without any harm ensuing; without the system's suffering the least disorder. In the skin, or muscle, a thickening and slight induration may take place; and, except by accident, the change may not be discovered. But let the same thing happen in the transparent cornea, and the unhappy patient is at once deprived of the use of one of the most beautiful and most useful organs in the

body. Here the most prominent symptom, the blindness, is not to be attributed to any operation of the living power, but to a mechanical defect in the organ of sight. In this case the injury is local, and the constitution will not realize any consequent disorder.

Let a similar thickening to a somewhat greater extent occur in a part of much less delicate structure,—in the oesophagus. Let a ring of the mucous membrane of this part become thickened and rigid, so that it will not suffer the usual dilatation. If in this or any other mode, a contraction is produced in this part, deglutition becomes impeded; and in proportion to the difficulty of swallowing food, the system is made to suffer; insomuch that by such a disorder death may shortly be occasioned, although the first disease may be most simple in its nature, of a very limited extent, and in an organ not vital.

In this case the system is affected only, or almost only, in consequence of the mechanical obstacle to the performance of a necessary function. But suppose a disease of the same nature, and of not much greater extent, to take place in the pylorus. In this instance the system becomes affected in two ways; first, because a mechanical obstruction prevents the due performance of the functions of the stomach, &c.; and second, because the system sympathizes with the irritable and important organ, in which the disease is situated.

Suppose now that a similar change of structure, or that any change of structure, should take place in one of the valves of the heart. As these parts are so formed as to be precisely adapted to the use for which they are designed, it will readily be conceived how in such a case there will arise many evils; such as first, a derangement in the circulation; then unusual efforts in the heart to overcome the obstacles opposed to it, and to execute its function, and accompanying these efforts perhaps sympathetic irregularity in the actions of the muscles of respiration; more certainly an interruption of the pulmonic functions in consequence of the irregularity in the circulation; these changes in the structure of the heart, adapted either to accommodate it to the unusual distension which it must suffer, or to enable it to resist this distension and overcome the obstructions, or

for both these purposes; and finally, after some intermediate steps, disorder in the whole body in consequence of irregularity in the functions of the heart and lungs.

We need not pursue this subject any farther to enable even our youngest readers to understand the nature of organic diseases. We have presented such as are the most simple in kind and most limited in extent. The change of structure is not in all cases so limited. For instance, in the liver, we sometimes see almost every part equally altered from its original state.

But there is one circumstance, which is to be observed in almost all organic diseases, and which is such as we should not be led to expect from merely a mechanical view of the subject. From such a view we might be led to suppose that a mechanical obstruction in any organ would constantly prevent, or interrupt the functions of such organ. This is not at all the case. On the contrary, such is the power of the living system to accommodate to circumstances, that organs suffering mechanical obstructions will, during long intervals, continue to perform their functions with great exactness. Yet whenever the irritability of the part is increased from any cause, or whenever any unusual cause of irritation is applied to it, then the organ betrays the embarrassment under which its functions are performed.

We come now to consider what are the means of obtaining an accurate acquaintance with organic affections. The principal of these are a knowledge of anatomy and of physiology, a careful observation of the symptoms during life, and a patient investigation of the vestiges of disease after death. It may be useful to make some remarks under each of these heads.

A knowledge of Anatomy and Physiology.—The more accurate and minute our knowledge of anatomy, the more capable we become of detecting changes of organization, and of ascertaining the nature of those changes. It is necessary that the science of anatomy, the basis of all medical knowledge, should be still more sedulously and minutely investigated; and that it should be more universally extended than it has yet been. Hitherto the professors of anatomy have laboured with an industry and ardour, which need only to be imitated by their

successors; but physicians in general have been very deficient in availing themselves of the acquisitions made by those professors.

In regard to physiology, that which need to be understood is what is called positive physiology by the French. It is necessary to know what experiment and observation have taught respecting the functions of particular organs, and respecting the laws of vitality in general. As to the dreams of speculatists, however amusing and interesting they may be rendered, they cannot be employed in laying the foundations of the science of medicine.

Observation of the symptoms during life.—The symptoms of disease consist in all those things which may be learnt by an examination of the patient, and by critical inquiries of him and of his attendants, respecting the changes which have been induced by disease. However a minute and scrupulous attention to this branch of medical science may be despised by men of towering and lofty minds, those not gifted with intuition must resort to it for instruction how to recognize and how to distinguish diseases.

By what is to be discovered externally, and by the information which the patient is capable of giving of his sensations, and from these sources alone in any individual case can we learn what is going on within, and of what disease our patient is the subject. On this head we cannot forbear suggesting how extremely important is the study of the early symptoms of those diseases, which are commonly fatal; since we may thus be enabled to recognise them at the time when they are susceptible of cure.

A patient investigation of the vestiges of disease after death.—It is thus we are to confirm or correct our opinions in cases where, from want of opportunity, or want of skill, we have failed in attaining the first object of our profession, the prolongation of life. The ignorant, the lazy, and the dogmatic, are disposed to undervalue and contemn this mode of acquiring knowledge. What if there be diseases which do not produce any change of organization, and consist only in affections of the living powers, which can no longer be traced when these powers have ceased to exist; may we not, even in these cases, convince

ourselves by examination that such is the fact? But in many instances such opinions will be disproved by a critical inspection of the dead body; and these instances will multiply in proportion as anatomy enables us to distinguish and estimate minute changes of structure. We may even now add much to our stock of knowledge, if instead of cursorily turning over the viscera of the several cavities, we particularly notice all the phenomena which present themselves in each and every part of the late subject of disease. If we would have a pattern, we shall find one in the learned, and laborious, and faithful Morgagni. His epistles on the seats and causes of diseases may be called dull and obscure by the cursory reader; but when we seek information on any interesting question, then we learn what a most valuable treasury of medical knowledge those epistles contain.

Some ask why we would investigate diseases, which seem to be certainly fatal, as particularly are many diseases of the heart. We answer, it is of the first importance to ascertain with entire precision the connection between certain symptoms and certain organic changes, even though these be incurable: since otherwise we may confound those diseases which are, with those which are not capable of being relieved. Besides, we should never despair; for those who are constantly seeking information, and treading the paths of true knowledge, will sometimes in a manner unexpected, and at a moment when they least anticipate it, make a discovery sufficient to repay a life of labour.

There is one other objection which the lazy find very convenient; viz. that the prejudices of mankind deny them opportunities of examining the dead. This is at least no objection where those prejudices do not exist, or can be removed; and this can only be ascertained by inquiry and effort on the part of the physician. It is true that in some instances such prejudices cannot be overcome; but, to the honour of those persons with whom we have had to deal on this subject, we declare that our fellow citizens in general appear to entertain very liberal and just sentiments respecting it.

We cannot go into a consideration of the causes of organic diseases, which is well treated in the preliminary discourse.

We have perhaps already occupied too many pages on the subject of that discourse.

We have allowed ourselves great latitude in this general consideration of organic diseases, because we think the subject of the highest importance, and because it opens to our readers the use of the work before us. In speaking of the body of the work we must be brief. It is at hand, and will, we hope, be in the libraries of all our brethren.

The diseases of the heart are described as they concern, first, its membranous coverings; second, its muscular substance; and third, its fibrous or tendinous tissue. In the fourth general division are treated those affections, in which parts of different structures are concerned, and those unnatural states which may be considered as diseases of the organ. The fifth division relates to aneurism of the aorta. The work is then terminated by some corollaries, in which the author speaks of the causes, signs, course, prognosis, and treatment of the diseases of the heart, and of the means of distinguishing them from the affections with which they have been confounded.

In considering the symptoms which belong to diseases of the heart, it will be found that they may be ranked under the following heads. First, those which belong to the heart itself, and to the arteries; such as palpitation, its violence, situation and extent; the phenomena or percussion of the thorax; and the pulse.

Second, those which belong to the respiratory organs, such as dyspnœa, cough, and expectoration.

Third, those which belong to the capillary vessels, in every part of the system, in consequence of these vessels being embarrassed with blood in two great quantity and of bad quality; hence among other effects we see irregularities in the secretory functions and hydropic effusions. In addition, we must regard those characteristics, which present themselves in the countenance and general appearance of the subjects of these diseases; and those variations in the symptoms which are occasioned by motion and by position.

We must also attend to the variations in the symptoms occasioned by temperament, age, sex, and habits of life, as well by

the operation of external circumstances. From these causes principally it happens that the most distressing symptoms occur in paroxysms, more or less frequent, and of greater or less duration in different subjects ; even independent of the particular nature of the affection. Above all, we must remember how rarely it happens that every symptom belonging to any particular disease occurs in any one patient, and that sometimes all the symptoms, or at least those which are most prominent, will subside for a considerable length of time. To-day the danger of death seems most imminent ; to-morrow the patient pursues his ordinary occupations unmolested. Such is remarkably the case in disorders arising from mechanical obstructions, before the frequent recurrence of paroxysms has, by interrupting and embarrassing the organic functions, injured the tone of the system at large.

Corvisart has done very much toward exposing and elucidating the character of organic affections of the heart generally. But we feel assured that much yet remains to be done on this subject. In the diagnostics which he gives us in regard to those affections and diseases of the other thoracic viscera, and in regard to the organic changes of different parts of the heart, he has undoubtedly committed errors. Of these we could give some instances ; yet unless we should give evidence in support of our statements, this would be improper ; and to do so would occupy too much room. But let us not detain our readers to inquire what there is in this work to be censured. It will be time enough to discuss some minute errors of detail, when the great and general truths, which are delivered in it, have become familiar to the faculty at large.

On the treatment proposed by M. Corvisart, we shall not make any comments. It must be obvious to all, that the probability of effecting a cure in the diseases of the heart must be very small, unless it be attempted in the first stage of those diseases. Hence the importance of being able to distinguish them in that stage. In the present state of our knowledge it will generally be most safe, where the case is doubtful in that stage, especially if it be acute, to treat it as an affection of the heart; since we cannot readily imagine a case, in which so

much harm can be done by adopting this course, as must ensue if it be neglected when the heart is truly the subject of disease.

Under this head it may be proper to state that although the English physicians have not understood the diseases of the heart so well as the French, they have bestowed much practical attention on them, under other names, particularly under that of hydrothorax ; and in this way they have made greater advances in respect to the treatment than their neighbours. In support of this statement it will be sufficient to refer to the very valuable work of Dr. McClean on hydrothorax, published in 1810.

Lest the work under review should be thought of little value, because it does not supply us with a successful mode of treating the diseases it discusses, we will add one more remark. The investigation of the diseases of the heart has a tendency not only to make those diseases known to us, but also to induce a more accurate discrimination of the diseases of the other great and important organ which is lodged in the same cavity with the heart.

It may seem proper for us to speak of the merits of the translation of this valuable book. We lament that we cannot speak of it as we wish. Since unhappily it is so, we must leave to others the unpleasant task of pointing out its errors. Our situation is, we think, such as that this ought not to be deemed a shrinking from duty.

ARTICLE VIII.

Communications of the Medical Society of Connecticut. No. I. Newhaven ; Sidney's press. 8vo. pp. 80. 1810.

We view the progress of medicine in this country with peculiar interest. Thirty years ago, the United States could not boast of a single periodical journal devoted to this science and its collateral branches ; nor of more than one public institution

for the instruction of candidates for this responsible profession, and even that was in its infancy. Medicine was left far in the rear of the arts, and we were content to adopt theories and mould our practice on the principles of European physicians. This dependance is gradually lessening, and we trust that if we must still be accused of imitation, we may advance some claims to originality. The character of American medical literature, it is to be hoped, is rising. Numerous schools of medicine have been instituted, journals of philosophy have been greatly multiplied, and numerous societies been established, whose members are ardent in the pursuit of knowledge, and ready to communicate to the public the results of their observations and experience.

The question has more than once been asked, why such societies, which by their constitution, embrace the most distinguished physicians of the state, and by the frequency of their meetings afford sufficient opportunities to their members to contribute their share of observation, should have done no more in aiding the cause of medicine and the public good by the publication of their transactions. The apparent tardiness with which such works have been offered to the public eye, has operated against the characters of these associations, and they have been accused of feeling little interest in the progress of their profession, and of concerning themselves less about the opinions which may have been formed of them. This reproach however we believe to be unmerited. Although these societies are nominally under the patronage of the government of the state where they are formed; yet, generally speaking, with this honour, they have derived no pecuniary assistance, and thus, though as a body they may be anxious to advance the cause in which they are engaged, yet as individuals they are not disposed to be taxed both in mind and money. They possess no permanent funds. The necessary expenses of the institutions are defrayed by annual assessments on their members, and these are already as heavy as could be imposed without some danger of boasting of a Medical Society, only in name. Beside this cause there exists another in the difficulty with which individuals who are engaged in an active profession, can be brought to submit to the

sacrifice of the time necessary for the completion of the objects of such societies, and although in these the labour is generally sustained by a few persons; yet as it usually happens that the interest taken by such individuals in the general concerns, is more apt to excite jealousy than to conciliate confidence, it cannot be expected that there will be a constant supply of men, who are willing to build up the public good with one hand, while they are compelled to defend themselves from the teazing attacks of the restless and discontented with the other. The Massachusetts Medical Society has been assisted by no foreign aid ; and yet, we are proud to say it has published more than any other institution of the same nature in the United States. We know not that the Medical Society, whose memoirs we notice, labours under the same impediments. We might perhaps be permitted to indulge the hope that it did, in order to find an apology for the reluctance with which the ingenious and learned physicians of Connecticut have come forward, at this late hour, to claim their share in raising the character of the medical literature of New England.

We regret that our limits will not permit us to give an analysis, or abstract of the papers contained in this respectable work; we shall therefore merely recite the titles of each.

On Petechial Fever, by Dr. T. Hall.
Dissertation on Aliment, by Dr. Wm. Tully.
Case of an affection of the right Ovarium, by Dr. J. Barker.
Analysis of Stafford Spring Water, by Dr. S. Willard.
Case of an enlarged Liver, by Dr. J. Foot.
Fatal effects of Canine Madness, by Dr. H. Alden.
Case of Hydrophobia treated with Opium, &c.
Case of strong Morbid Action, treated by depletion, by Dr. J. Foot.
Case of Petechial Fever, by Dr. J. Foot.
On the Importance of Medical Knowledge, by Gideon Shepherd, M. D.
On Anasarca, by A. Tomlinson, M. D.
Case of Uterine Polypus, by Eli Ives.
Case of Biliary Calculi, by L. Hopkins, M. D.
Case of retroverted Uterus.

INTELLIGENCE.

MEDICO-CHIRURGICAL TRANSACTIONS.

(Continued from page 239.)

An account of a severe case of Erythema unconnected with mercurial action. By Alex. Marcet, M. D. &c. This case was attended with stiffness, heat, redness, and swelling on the surface of the body, particularly the hands, feet, ears, and lips. The skin then exhibited the appearance of minute vesicles. Afterwards followed a total desquamation of the cuticle from the parts affected, and an ichorous discharge. These symptoms are analogous to those of the Erythema Mercuriale or Hydrargyria, as it has been called; yet the patient had taken no mercury whatever. Dr. M. concludes that this disease may arise from different causes, of which mercury is but one; and thinks the term Erythema ichorosum a more suitable name than E. mercuriale, for obvious reasons.

Observations on the mercurial plan of treatment in dysentery, &c. By William Ferguson, Esq. In the "true acute dysentery," attended with general constitutional affection and a diagnostic which Mr. F. calls never failing, viz. the *urine* being high coloured, even green, scanty and pungent; he gave half a grain of calomel with one grain of ipecacuan every hour. A mild purgative was added if the abdominal pain was not alleviated. The mercury was persevered in until the gums were affected, which commonly happened in 48 hours, "when a solution of the disease might be looked for with confidence." Mr. F. had found in dissections of those who died from the disease, that the colon, particularly its descending portion, was thickened, knotted, and ulcerated to an inconceivable degree, the *liver* was uniformly *blackish, hard* and *wasted;* the gall bladder flaccid, and about

half full of thin watery bile. Mr. F. is inspector general of hospitals to the army of Portugal.

A case of Trismus following a contused wound of the head. By J. Hearkness, Esq. This case, and a subsequent one, by Mr. John Parkinson, were successfully treated by the liberal use of opium, accompanied by cathartics in corresponding doses to secure regular alvine evacuations. The quantity of laudanum taken by the first patient averaged one ounce per day for 22 days, and this "without any effect upon the sensorium, or the production of pain in the head, acceleration of pulse, or disposition to sleep. The bowels being rendered torpid, the patient took on an average for nine days 40 grains of calomel, 51 of colocynth, and 38 of gamboge daily. After his mouth became affected, the calomel was omitted, and 80 grains of colocynth taken with 40 of gamboge. During most of the time he took two bottles of wine and six pints of porter per day.

Some observations on Spina Bifida, by Astley Cooper, Esq. F. R. S. The method of Mr. Cooper was spoken of in the first number of this journal. The present paper contains four cases of the disease under the care of that gentleman, which were treated with a view to a palliative or radical cure. The palliative method consists in treating the case as a hernia and applying a truss to prevent its descent. The radical cure is effected by evacuating the fluid from time to time by puncture, until adhesion takes place between the sides of the sac. Mr. Cooper states that a cure is not practicable when the disease is connected with unnatural enlargement of the head, with paralysis of the lower extremities, or incontinence of fæces and urine; if the tumour has burst at birth, or soon after; or if the deficiency of the spine be very great.

Flora Virginica.

May 20.—We are authorized by Professor Barton, of Philadelphia, to state, that the first part of his "Flora Virginica"

will be published in two or three weeks. The scientific world will reap much from the talents and labours of this accurate and indefatigable naturalist.

Dr. James Currie's Pamphlet on prejudices commonly entertained against Mercury.

Dr. James Currie, one of the physicians of Guy's hospital, London, and lecturer on the theory and practice of medicine, has long promised the medical world a treatise on the Hepatic Function ; the purposes it serves in the animal economy ; and the powerful influence which a disordered state of it exerts in exciting aggravating and modifying various forms of disease both general and local.

Dr. C. sometime in the last year published a corrected and enlarged edition of a pamphlet containing an "Examination of the prejudices commonly entertained against mercury, as beneficially applicable to the greater number of liver complaints, and to various other forms of disease as well as syphilis.

More facts may be expected in the promised work than have hitherto appeared on this subject ; for there is perhaps not a disease, except only those which are the effects of a peculiar specific morbid cause, to which the body is liable, that the doctor does not refer to the liver, and the consequence of this is, that there is scarcely a complaint which he does not treat with some preparation of mercury.

He tells us in his pamphlet, that, "the opinions advanced in the treatise, soon to follow this little work, are not the offspring of youthful imagination, working on a few principles, that much of what he describes, he first experienced in his own person ; and what was wanting to complete the outline, has been abundantly supplied by observations on others, and that with regard to the injunction of Horace, *nonumque prematur in annum*, has been twice fulfilled."

In a note to page 14, the doctor, after highly complimenting Dr. Cheyne on his treatise on hydrocephalus, thus expresses himself on that disease : "From the time I became a public

teacher on the practice of medicine, (now nine years) I have uniformly taught a doctrine with respect to this disease, which, like some other of my opinions, has been generally considered wild and visionary; it is, that acute hydrocephalus is seldom if ever an idiopathic disorder of that organ, in which its prominent symptoms and fatal consequences are so conspicuously displayed; but that it is a secondary and symptomatic operation on the brain, arising from an inflammatory erithism or irritation of the liver in consequence of that intimate sympathy which exists between these two viscera, at all stages of life, but especially during the infantine and puerile periods; and as a corollary from this, that although, at no time during the progress of the complaint are we to omit the use of means directed to the head itself as a measure of security, yet that the most successful plan is to take up the disorder in the early and probably the only curable stage as hepatitis, and treat it by leaches and blistering the right hypochondrium, and by calomel given in such doses as first to excite the secretion, and next to emulge the ducts of the liver."

Dr. C. does not think that necessarily any harm whatever follows the use of mercury, and not only admits to the full extent, that bad consequences are always owing to mismanagement, but says "to grant still more, like antimony, opium and every other active remedy, mercury would probably do little good, if it were not also capable of doing some harm!"

Mercury has been taxed with producing consumption. From the slightest observation, says Dr. Currie, we must see that this opinion is founded in error. "Without accusing the male youth of the present day of greater laxity of morals than those of former generations, it may be asked, how many arrive at the adult age without having had occasion to use mercury. But these are not the victims of consumption." Continues the doctor, "Does not by far the greater number consist of females whose rank and character not only place them above all suspicion of such necessity, but who never took a grain of mercury in their lives?" Dr. C. derives a very powerful argument for the liberal use of mercury in hepatic diseases from the indiscriminate use of it in India for that complaint. "But it may be objected," he continues,

the operation of external circumstances. From these causes principally it happens that the most distressing symptoms occur in paroxysms, more or less frequent, and of greater or less duration in different subjects ; even independent of the particular nature of the affection. Above all, we must remember how rarely it happens that every symptom belonging to any particular disease occurs in any one patient, and that sometimes all the symptoms, or at least those which are most prominent, will subside for a considerable length of time. To-day the danger of death seems most imminent ; to-morrow the patient pursues his ordinary occupations unmolested. Such is remarkably the case in disorders arising from mechanical obstructions, before the frequent recurrence of paroxysms has, by interrupting and embarrassing the organic functions, injured the tone of the system at large.

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ARTICLE VIII.

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We view the progress of medicine in this country with peculiar interest. Thirty years ago, the United States could not boast of a single periodical journal devoted to this science and its collateral branches ; nor of more than one public institution

bones to a thousand pieces without tearing the skin. The following is an instance of its most singular and violent effects. At the siege of Bassain, near Bombay, in the year 1780, a sepoy, who was placed in the trenches to look out for shot, was too late in *dipping*; and a shot in consequence knocked off his turban into the trench behind him. The sepoy jumped down to pick it up. A surgeon, who happened to be near the spot, immediately went to him; but found on examination that the head was not in the least touched by the ball. From the state of the pulse, however, the surgeon deemed it proper to send the man to the hospital; and though no external injury could be discovered, he died in 48 hours after. The officer who was in the trenches at the time, thinks he heard it said, that the surgeon examined the sepoy's head after death, and found an extravasation of blood. Mr. Ellis seems to think that electric or other similar matter existing in the air, may be accumulated or developed by the motion of a cannon ball in a quantity adequate to produce the extraordinary effects ascribed to the "wind of a ball."

Hemorrhage, Herpes, &c.

Mr. John Ring, a surgeon, well known from his frequent publications, has given in the pages of the Medical and Physical Journal a number of useful hints, the first of which may appear of doubtful utility to those who have not had experience of the application. The most powerful styptic, he tells us, that I have ever used, is *powder of charcoal.* In bleedings of the nose it may be applied by means of tents first moistened with water, and then dipped in this powder; but in slight cases it has answered by being taken like snuff. In other cases it is to be sprinkled on the part affected, and retained there by means of a compress. The use of the unguentum nitratis hydrargyri, ungt. acetitis plumbi, and ungt. subm. hydrargyri et ammoniæ or U. præc. albi in psoprophthalmia tinea, excoriations behind the ears and herpetic eruptions, is so common here, that we cannot attribute to those applications the merit of novelty. Mr. Ring does not inform us whether he has found it necessary to employ

the solution of muriate of mercury internally, or the solution of nitrate of silver externally. The following injunction of Mr. Ring is inserted as well on account of its importance as because the same remark has been made by a very able and experienced practitioner of this place.* "An aperient should always be administered within 48 hours after delivery. It is proper to direct it on the morning of the third day inclusively. A table spoonful of castor oil is generally sufficient ; when this fails alone it should be aided by an injection."

Mr. Bryce's Test of Genuine Cowpox.

Five or six days after the first inoculation, Mr. B. makes a second. If the disorder be of genuine character, the second inoculation, though performed some days after the first, will have its progress so much accelerated, as to have an areola formed a few hours after the first ; and during the remaining stages of the cowpox, the peculiar appearances of the two inoculations will take place nearly at the same time ; for the constitutional action excited by the first is extended to the second. Those engaged in vaccination have frequently witnessed that punctures and eruptions in the neighbourhood of the vaccine vesicle, often assume the appearance of cowpox. Even a whole flock of the eruptions of chicken-pox have been seen to exhibit a semi-cow-pock character. Mr. Bryce usually inoculates with the crust, dissolved in cold water. He recommends that the crusts should be carefully selected, and that the central, dark-coloured part be employed.

Umbilical Hernia of Infants.

In the London Medical Review we find a recent instance of this hernia treated by ligature, agreeably to a method practised by the Greeks and Arabians, and lately employed by Desault. It consists in carefully returning the hernial contents, and applying a waxed ligature around the base of the integuments and sac. The latter, of course, mortify and fall off ; while an adhe-

* Dr. Rand.

sion takes place at the mouth of the sac, sufficient to prevent a subsequent protrusion. When the first ligature becomes loose a second should be applied, and so a third. This is a rough practice, not justified by the inconvenience or danger of the disease: or at least better adapted to the patients of the Hôtel Dieu, than to those whose situation admits of careful and continued attention. The best truss for umbilical hernia is that represented in Mr. Hey's "observations." It consists of a round pad, from each side of which rises a spring, secured by a strap on the back. This disorder may also be cured by the application of a pad of convenient size and form, which may consist of linen compresses, to be well secured by strips of adhesive plaster. Even when neglected, the umbilical hernia of infants, so far as we have observed, usually disappears at the age of three or four years.

Tables of the Gravid Uterus.

Mr. Hogben, surgeon, of London, has nearly ready for the press, in two classes, a series of anatomico-mechanical tables of the human gravid uterus, the size of life, and rendered more agreeable to nature than any that ever before appeared on paper. They represent parturition in its various stages, the presentations of the head of the fœtus, surrounded by the distended uterus in the clear and comprehensive manner necessary to guide the young accoucheur. The numerous plates which compose this work have been under the hands of eminent engravers nearly four years, the whole of which is by way of illustrating a treatise on parturition and the science of midwifery in general.

Med. and Phys. Journal.

Monro's Morbid Anatomy.

This work, just published, treats of the morbid anatomy of the human pharynx and æsophagus, stomach and intestines. It contains about 500 pages, and 20 well executed plates. The plan of it is very similar to that of Dr. Baillie's valuable work; and its execution does not seem, from the examination we have

given it, like to discredit the high name of MONRO. A publication of this nature cannot fail to be well received, since it is a collection of facts, the importance of which can never be diminished by the change of medical hypothesis. The author is Dr. Alexander Monro, jr. the third of that name, who has successively occupied the anatomical chair in the university of Edinburgh.

Spontaneous Combustion in Manufactories, &c.

The frequent accidents in our manufactories by fire have excited the attention of scientific men. We find two papers published on this subject, one in the New York Medical Repository, by Dr. Seybert, member of Congress, a distinguished chemist and mineralogist; the other in the Philadelphia Emporium, by Dr. Coxe, Professor of Chemistry. It appears from their researches, that a multitude of substances are capable of spontaneous inflammation, and that others evolve gaseous fluids which suddenly inflame on the approach of fire. A curious instance of the latter is related from Count Morozzo. While a baker's boy in TURIN was turning over some flour in a small room where a lamp was suspended, a sudden inflammation took place, followed by so violent an explosion, that the windows and window frames in a shop below were thrown into the street. Repeated instances of a similar nature have occurred.

Among the list of articles mentioned by Dr. Seybert, as having taken fire without the approach of flame, are the following:

Candlewick made of hemp-yarn, accidentally impregnated with oil.

Cotton goods on which linseed oil had been spilt.

Roasted bran in a linen cloth.

Wet hay, corn, and madder; especially if any portion of iron should be intermixed.

Sail cloth smeared with oil and ochre, took fire in a magazine at Brest.

New cloth; and fire-wood soot immersed in hemp oil varnish.

Two Russian frigates were destroyed by the spontaneous inflammation of German lamp-black.

Cotton yarn impregnated with oil.

Vegetables boiled in oil or fat, and left to themselves, after being pressed.

Heaps of linen rags in paper manufactories.

Pyrites, and the cinders from the furnaces of glass works, when exposed to a moist atmosphere.

Cuttings of iron, which had been previously immersed in water.

The Pantheon in London was destroyed by the inflammation of a paint made of Derbyshire woad, used in painting the scenery.

It is probable that many other substances will be found capable of undergoing the same process. We are told of the spontaneous combustion even of brandy-drinking men and women! especially of the latter. Prudent people will be inclined to wait for better evidence than we have yet seen, before they give credit to these last accounts, even when they come from learned societies. The others are sufficiently authenticated, and ought to inspire those concerned in manufactories with great circumspection.

Hernia.

A subject lately examined by Dr. Gorham had a scrotal hernia of the *left* side, of long standing. It was very large. On opening into the sac it was found to contain the whole of the cæcum, the appendix, and about three inches of the ilium. Both patellæ had been fractured some years before the death of the patient. The fracture had taken place near the ligaments which tye them to the tibiæ, and the bones were drawn about three inches above the knee. The capsular ligaments were found entire, enveloping the joints.

Domestic Opium.

A small quantity of opium, equal to the best Turkey opium, was exhibited in this town the last summer, by Mr. Moses Dennison, collected by him from the white poppy growing on his own farm, at Shirley, in this state. He also produced a larger quantity of extract, of a very superior power, made by boiling the capsules and stalks of this plant in water. We understand he means to cultivate the poppy in the large way, should the sale of the opium compensate for the labour and expense of its collection.

Pharmacy.

The following is the result of Mr. Henry's experiments on the waste which pulverization occasions in certain substances employed in medicine; as reported to the members of the School of Pharmacy at Paris. In 100 parts of each, the comparative loss is thus stated.

Substances.	Produce.	Waste.
Ipecacuanha,	87	13
Jalap	92	8
Rhubarb	93.8	6.2
Squill	87.5	12.5
Cinchona	93.7	6.3
Gum Arabic	93.5	6.5
Scammony	95	5
Cantharides	92.7	7.3
Sal Ammoniac	98	2
Cream of Tartar	97	3
Antimony	97	3
Gum Tragacanth	93.6	6.4
Cinnamon	93.6	6.4

Phil. Jour.

Royal Society.

Feb. 13.—Mr. John Davy communicated by his brother Dr. Davy, a paper in opposition to the opinion of M. M. Gay Lussac, Thenard and Murray, that there is no action between gaseous oxyde of carbon and oxymuriatic gas or *chlorine*, a name given to it from its green colour, when exposed to the rays of the sun. Mr. Davy states a different result. He gives likewise an account of the nature and combinations of this substance, which neutralizes four times its volume of ammonia, and forms with it a peculiar oil.

Feb. 20.—A paper on the combination of certain metals with chlorine and oxygen was communicated by Mr. John Davy. The pure combinations of metals with chlorine resemble in many respects oxydes ; they are non-conductors of electricity, many of them are very volatile, and they form muriates by decomposing water. The author describes two combinations of copper with chlorine, two with iron, and two with tin. Bismuth, arsenic, antimony, zinc and lead, he has also been able to combine with chlorine. The experiments of Mr. J. Davy confirm the fact, that oxymuriatic gas or chlorine has not yet been decompounded.

Imperial Institute.

M. Lechenault de la Tour, one of the naturalists who sailed with Captain Baudin, has given us an account of the trees, the juice of which the natives of Java, Borneo, and Macassar employ to poison their arrows ; and which, under the name of *Upas*, have lately been the subject of such exaggerated accounts. There are two species of these poisons, the *upas anthiare*, and the *upas thieuté*. Both these destroy life in a few minutes, by the slightest wound, but the latter is the most violent. It is the extract of a species of strychnos, a woody plant of the family of *apócins* (*apocineæ*) which raises itself by climbing to the branches of the highest trees. The other exudes from a large tree

which M. Lechenault names *Anthiaria Toxicaria*, and which belongs to the family of *orties* (*urticæ*.)*

MEDICAL REPORT,

By John Gorham, M.D.

The preceding spring has been unusually cold. The mean temperature of March was $29\frac{1}{2}°$, of April $51\frac{1}{2}°$, and of May $54°$. In the first part of spring, the prevailing winds were from the north, and were peculiarly chilly and disagreeable. In April and May they alternated with the usual easterly winds. The proportion of the latter has been less than in the preceding years, but they have produced the same unpleasant sensation on the body, which has been characterised by the term *rawness*. March and April were dry months, but a large quantity of rain fell in May.

In the early part of spring, the *whooping cough*, which prevailed extensively the preceding autumn and winter, had not subsided; but as the season advanced it gradually disappeared, and was succeeded by *pneumonia* and *catarrh*.

Some cases of the former occurred, combined with typhus.

The latter complaint soon became very general, and attacked both adults and children, though it was more severely felt by the young. The catarrhal affection commenced in these, with an inflammation of the mucous membrane of the bronchiæ, producing a harsh dry cough, and the complaint in a day or two extended to the fauces and membrane of the nose. This local complaint, though generally accompanied with diminished appetite, continued for two or three days, previous to the appearance of fever. At that period, the fever came on suddenly, and for the most part towards night. The skin became hot and dry, the pulse quick, the respiration hurried, but not in general laborious, appearing to depend rather on an accelerated circulation than on obstruction or pain in the lungs or thorax. The cough

* These terms, as well as some similar ones in the former part of this number, are names of *orders of plants* in the botanical arrangement of Jussieu. This is generally adopted by the French in preference to that of Linnæus. Ed.

was fuller and longer continued than in pneumonia, and the patient did not appear to suffer much from pain in the chest. In some cases these symptoms were accompanied with severe pains in the limbs and joints, particularly of the wrists, fingers, and ankles, and a diffused redness with some swelling appeared in the parts within the mouth. In severe cases delirium came on the second or third night; when this was preceded by or accompanied with copious sweating, the disease was found in its progress to assume a typhoid character. But these cases were rare.*

In two or three instances a state of insensibility, with great prostration of strength, and a very feeble pulse, was suddenly induced, and continued for nearly twenty-four hours, when these symptoms as rapidly subsided, and the patients recovered.

After the second or third day, mucus was copiously formed in the trachea and bronchial cells, and evidently augmented the labour of respiration.

This catarrhal affection terminated on the fifth or seventh day with free perspiration, but the cough and discharge of mucus continued for some days after. Towards the termination, the urine often appeared turbid, and deposited, on standing, a copious yellowish white sediment.

* We may observe in this place that the combination of idiopathic fever with local inflammation is common in this town. The organs most apt to be affected are the lungs, the liver, and the stomach and intestines. The degree of this secondary affection is very various. In many it is evidently to be regarded only as a symptom, but in others the functions, for example of the lungs, are so much impeded, that the complaint is with some difficulty distinguished at first from a primary disease of that organ, and cases have occurred in which it has been considered and treated as pneumonia. In typhus accompanied with severe affection of the parts within the thorax, or in pneumonia of the typhoid kind, we shall find that about the third or fourth day low delirium comes on, attended with a profuse debilitating sweat, not critical, with considerable prostration of strength, and a moderately full and accelerated, though not a hard pulse. The tongue is of a dark brown colour, and often moist. At this period, although there is a copious formation of mucus in the lungs, the pain is but slightly alleviated, and the cough is distressing. It is needless to observe, that the treatment adapted to remove active inflammation of the lungs, would in such cases probably be fatal.

The prognosis was favourable, as a great proportion of those attacked by it recovered. A few cases terminated fatally, and the following were the morbid changes observed on examination.

Inflammation of the mucous membrane of the larynx, niachea and bronchiæ. Very adhesive white mucus in the bronchiæ. No inflammation of the substance of the lungs or pleura.

In a large proportion of cases the fever was subdued, in a short time, by an emetic and sudorifics. When the disease was severe, and the quantity of mucus large, so as to impede the function of respiration, the greatest relief was obtained by frequently repeated doses of emetics, particularly of ipecacuanha, and of those expectorants which frequently prove emetic, as squill and seneka root. Some cases required vesication, and the younger the patient the more immediate were the good effects of blisters. In children of five or six years of age, when the skin was hot and dry, the application of epispastics and of sinapisms afforded no obvious relief, nor was the warm bath more serviceable ; but after the heat had lessened, these applications were eminently beneficial.

When this catarrhal affection was accompanied with diarrhœa, small doses of ipecacuanha, after an emetic, or of that root combined with sub-muriate of quicksilver, were found most useful in restraining the discharge, and in promoting free perspiration and expectoration. Much benefit was also derived from the occasional use of mild cathartics.

In the few cases which assume the typhoid character, the patient was relieved by seneka root, camphorated emulsion, blisters, ipecacuanha, and towards the conclusion by bark and wine. In May, the *rash* made its appearance, but in general it was not the subject of medical treatment.

ABSTRACT OF THE BILL OF MORTALITY FOR THE TOWN OF BOSTON,

From the 22d of Oct. 1810, *to the* 31*st of Dec.* 1811....*agreeably to the Returns made to the Health-Office.*

	One year & under.		From 1 to 2		From 2 to 5.		From 5 to 10.		From 10 to 20.		From 20 to 30.		From 30 to 40.		From 40 to 50		From 50 to 60		From 60 to 70		From 70 to 80		From 80 to 90		From 90 to 100				
1810.	*Mal*	*Fem.*	*M.*	*F*	*M.*	*F*	*M.*	*F.*	*M.*	*F.*	*M*	*F*	*M*	*F*	*M*	*F.*	*M.*	*F*	*M*	*F*	*M.*	*F.*	*M.*	*F.*	*M.*	*F.*	*Males.*	*Fem.*	*Total.*
Oct.22,	3	2	2	3	0	1	0	1	1	0	2	0	0	2	2	1	1	1	1	1	1	0	1		0	0	14	13	27
Nov.	5	3	1	1	0	3	2	1	0	2	0	2	3	1	3	5	2	2	0	1	2	2	1	1	0	0	20	28	48
Dec.	4	12	1	4	0	1	0	2	2	0	2	0	5	3	5	2	3	3	3	1	0	1	0	2	1	0	25	34	59
																											59	75	....134—
1811																													
Jan.	4	5	2	1	0	1	0	0	0	0	3	4	2	1	5	2	0	2	1	3	0	1	1	1	0	0	17	21	38
Feb.	0	6	1	1	3	1	0	0	0	2	3	4	7	8	2	2	2	1	0	2	0	0	0	0	0	0	19	26	45
March,	7	4	1	2	3	1	0	1	1	1	2	8	6	5	1	3	3	0	1	2	3	1	0	2	0	0	29	30	59
April,	6	10	3	1	0	0	0	0	0	1	5	4	4	1	8	3	2	2	2	1	0	1	2	0	0	0	32	24	56
May,	6	4	6	4	2	1	1	2	2	3	4	7	4	2	4	3	1	1	1	1	0	2	0	1	0	0	30	31	61
June,	4	8	0	1	1	1	1	1	1	0	1	4	2	6	3	1	1	2	2	0	1	4	0	1	0	0	15	30	45
July,	2	4	0	1	0	1	3	0	1	0	6	1	6	4	1	5	3	2	2	2	1	3	1	0	0	0	26	23	49
Aug.	8	7	1	7	0	1	0	0	2	1	5	0	2	4	10	3	2	5	5	1	1	4	0	0	0	0	32	34	66
Sept.	10	19	4	7	0	0	0	2	1	2	4	2	1	3	3	3	1	1	1	2	2	1	0	1	0	0	29	41	70
Oct.	10	13	11	16	4	2	0	0	0	0	1	6	2	6	3	4	3	1	1	2	0	2	2	0	0	0	38	54	92
Nov.	2	12	9	4	3	0	0	1	2	3	5	7	4	2	3	2	1	2	2	2	2	2	0	0	0	0	32	36	68
Dec.	4	6	3	4	2	4	1	0	2	0	8	7	1	4	5	4	1	1	1	3	0	0	1	0	1	0	32	33	65
	75	115	45	57	18	18	8	11	15	15	51	56	49	52	58	43	26	26	23	24	13	24	9	9	2	0	331	383	....714—848

The Deaths of people of colour, of both sexes, to Jan. 1811, 12 }
Do. do. do. Jan. 1812, 80 } 94—which, added to the above enumerated 848, gives a total of nine hundred and forty-two deaths, from Oct. 22, 1810, to Dec. 31, 1811.
Died of Small-Pox, at Rainsford's island - - - 2 }

The DEATHS *preceding were caused by Diseases and Casualties as follows, viz.*

Abscesses	1	Hernia, or Rupture	8
Aneurism	1	Jaundice	10
Apoplexy	13	Inflammation of the bowels	1
Burns or Scalds	6	——— of the stomach	1
Cancer	5	Killed by lightning	1
Casualties	15	Insanity	1
Childbed	14	Intemperance	2
Cholera Morbus	6	Locked jaw	2
Colic	2	Mortification	11
Consumption	221	Old Age	26
Convulsions	36	Palsy	12
Cramp in the stomach	2	Pleurisy	8
Croup	1	Quinsy	15
Debility	28	Rheumatism	1
Decay	20	Rupture of blood vessels	1
Diarrhœa	15	Small-Pox,(at Rainsford's Island)	2
Drinking cold water	2	Sore throat	1
Dropsy	21	Spasms	2
——— in the head	23	Stillborn	49
Drowned	13	Suicide	1
Dysentery	14	Sudden death	25
Dispepsia or Indigestion	15	Syphilis	12
Fever, bilious	7	Teething	15
——— pulmonic	46	Worms	11
——— inflammatory	24	Whooping Cough	14
——— putrid	6	White swelling	2
——— typhus	33	Diseases not mentioned	48
Flux infantile	57		
Gout	3	Total,	942
Hoemorrhage	4		

Boston lies in 42 deg. 23 min. 15 sec. N. lat. and 70 deg. 52 min. 42 sec. W lon. The census of 1810 states the number of its inhabitants at 33,250; but as this [1810] census was taken in the month of August, when a very large proportion of the citizens was, as usual in that month, in the country, it is supposed this number [33,250] is more than a thousand short of the actual number then belonging, as residents, to the town.

BILL OF MORTALITY,

FOR PORTSMOUTH, NEW HAMPSHIRE, A. D. 1811.

BY LYMAN SPALDING, M. D.

COMPLAINT.	AGE.	Tot.
Angina Pectoris,	58· years	1
Aphtha,	1. month	1
Apoplexy,	75‘ years	1
Atrophy,	2. m 4. 7. 68, 64, 7, 2. 3. years	8
Cholera of infants,	1, 2. years	2
Colic bilious,	17. years	1
Consumption,	29‘ 60· 45‘ 35‘ 20. 48, 30‘ 59‘ 25‘ 48· 40· 33‘ 68‘ 69, 25· 30· 20. 70. 32· 44· 35‘ 60· 65· 54, 81· 30‘ years	26
Convulsions,	1. y 3, d 3. w 6. y 2. 3. 1, w. 2. y 2.‚m 1. w 1. m. 1. d	12
Cynanche maligna,	3 years	1
Diseased vertebræ,	24, years	1
Dropsy,	64· 60‘ 68‘ 31‘ years	4
Dropsy in the brain,	3. 2, y 2. 3, m 14. 4. 1. 1, year	8
Erythema,	2. 3, months	2
Fever pulmonic,	2. years	1
Hemorrhage,	28‘ 35‘ 69‘ years	3
Hooping Cough,	4. years	1
Intoxication,	31. years	1
Mortification,	1, 48, 2, 90, 4, years	5
Old age,	87· 83‘ 70‘ 76‘ 90, 87· 74‘ 81· 80, 88· 90· 85· years	12
Palsy,	69. 78‘ 58‘ 72‘ years	4
Phrenitis,	30· 8, years	2
Quinsy,	2, years	1
Rheumatism,	55· years	1
Scrophula,	26, 10, years	2
Smallpox,	20. years	1
Tetanus,	14. years	1
Casualties. Drowned,	78‘ 62· 50· 40. years	4
Casualties. Falling of earth,	35· years	1
Casualties. Suicide,	18, 41. years	2
	Total,	110

BIRTHS, Males, 130; Females, 124; 254. Still born, 15.

MARRIAGES, 69.

Portsmouth, the capital of the State of New Hampshire, situated 43 deg. 5 min. north latitude, and 6 deg. 26 min. east longitude from Washington, contains 6934 inhabitants.

Note. This bill is so constructed as to show the complaint, age, sex, &c· and whether married or unmarried. When a period follows the age, it denotes the male sex, a comma the female sex; when in their usual place at the bottom of the line, unmarried—at the top of the line, married.

BILL OF MORTALITY,

FOR PROVIDENCE, RHODE-ISLAND, A. D. 1811.

BY DR. JOHN MACKIE.

DISEASES, &c.

DISEASES.	AGE.	Males.	Females.	Total.
Anomalous,	20, 35, 65, 59 years		4	4
Angina Pectoris,	52, 68 years	1	1	2
Apoplexy,	65, 74, 83, 64 years	4		4
Aphtha,	8d. 3w. 15m. 2m. 1m. 12d. 2m.	5	2	7
Asthma,	65, 57, 70, 50 years	2	2	4
Atrophy,	2d. 3d. 2, 72, 18, 22 years	5	1	6
Cancer,	43 years	1		1
Cachexia,	4m. 18, 3, 19m. 7m 60 years	4	2	6
Cholera Infantum,	19m. 8m. 3, 1, 15m. 13m. 18m. 2 years	5	3	8
——— Morbus,	39, 68 years	2		2
Colic	41 years	1		1
Consumption,	62, 19, 38, 19, 64, 56, 22, 30, 21, 1, 22, 23, 34, 41, 25, 17, 30, 36, 6, 25, 53, 21, 30, 23, 25, 16, 63, 33, 17, 25, 48, 28, 35, 42, 16, 18, 37, 39, 72, 20, years	19	21	40
Convulsions,	1d. 18m. 1d. 5d. 1d. 16m. 1d. 10m. 3w. 2 years	7	3	10
Croup,	13m. 3 years	2		2
Dropsy,	23, 70, 60, 36, 75, 80, 84 years	1	6	7
——— in the head,	4, 17, 3, 13m. 14, 4 years	4	2	6
Diarrhœa,	35, 2 years	1	1	2
Dysentery,	2, 18m. 13, 1 year	2	2	4
Epilepsy,	23, 44 years	1	1	2
Fever, bilious,	33, 25, 55, 76 years	1	3	4
——— malignant,	38, 27, 22, 17 years	4		4
——— typhus mitior,	48, 30, 36, 20 years	2	2	4
——— typhus gravior,	40, 41, 28, 50, 12, 20 years	2	4	6
——— puerperal,	26 years		1	1
——— spotted,	35, 5 years		2	2
Hæmorrhage,	1d. 55 years	1	1	2
Herpes,	2 years	1		1
Insanity,	56 years		1	1
Inflammation of the bowels,	33, 19 years		2	2
——— lungs,	65, 76, 24, 2, 55, 29 years	3	3	6
——— liver,	67, 78, 48 years	2	1	3
Mortification,	42, 72 years		2	2
Old age,	82, 84, 88, 83, 73, 87, 90, 79, 86, 87, 87, 86 years	3	9	12
Palsy,	17, 57, 78 years	1	2	3
Rectum Imperforated,	2 days		1	1
Scrofula,	5, 8 years	1	1	2
Syncope,	24 years		1	1
Casualties, Fall,	1 year	1		1
Casualties, Drowned,	35 years	1		1
Casualties, Suffocated,	26 years	1		1
		91	87	178

BIRTHS, Males, 191; Females, 204; Total, 395.

Providence is situated in N. lat. 41 deg. 49 min. W. long. 71 deg. 23 min. and contains 10,071 inhabitants.

MEDICAL SOCIETY OF LONDON.

At a quarter before four o'clock, on Monday, March 9, the usual annual oration was delivered by Dr. Temple. He began by exhibiting a brief and succinct view of the various theories that have prevailed in physic, from the earliest ages in which medicine was studied and taught as a science, to the conclusion of the eighteenth century. The doctrines of Hippocrates, Democritus, Asclepiades, and Aretæus, subsequently reduced to order and method by Galen, and from him continued downwards for many centuries, passed successively in review before him. The appearance of the chemical sect, under Paracelsus, in the beginning of the sixteenth century, laid the foundation of an entirely new system, in direct opposition to that of Galen: these continued to divide the medical world, till both were in a great measure overthrown by the new lights of anatomy and physiology, and especially by the discovery of the circulation of the blood, about the middle of the seventeenth century. This discovery, however, great as it was, introduced a mechanical theory into physic, which, though more intelligible, as appealing more to the senses, was yet extremely defective, in overlooking the great influence of the living principle in every part of the animal economy. It is to Hoffman and Willis that we are principally indebted for first pointing out to us this the only proper path towards a pathology founded on just notions of the principle of life, as the efficient agent in all vital phenomena. While, however, the unfounded notions of the Galenical, as well as the chemical sects were thus discarded by the more rational and philosophical views of Hoffman and his successors, the theory of the most important diseases is even yet unsettled, and far removed from certainty. Hypothesis has succeeded hypothesis, every one of which has had an unfavourable influence on the treatment of diseases.

Med. and Phys. Jour.

RECENT BRITISH PUBLICATIONS.

Plates of the Brain represented in such a manner as to imitate dissection. By Alex. Ramsay, M. D. 4to. Edinburgh.

A New Edinburgh Dispensatory. By John Thompson, M. D. 8vo. Edinburgh.

Elements of the Science of Botany, as established by Linnæus, with 147 plates. 3d. edition.

A Review of Mr. Everard Home's Practical Observations on the Diseases of the prostate gland, and of his important anatomical discovery. By Jesse Foot, surgeon. 8vo.

Popular Directions for the treatment of the diseases of women and children. By J. Burn.

Jameson's Essays on the changes of the Human Body at different ages.

Plates of the Human Bones. Reduced from Cheselden.

The Principles of Physiological and Physical Science. Comprehending the ends for which animated beings are created, and an examination of the unnatural and artificial system of philosophy, which now prevail. By Richard Saumarez, Esq.

A Letter on the subject of the operation of popliteal aneurism, illustratad by cases, and a description of a new instrument. By Alex. C. Hutchison, M. D.

RECENT AMERICAN PUBLICATIONS.

Observations on Hydrophobia, produced by the bite of a mad dog or other rabid animal, with an examination of the various theories or methods of cure existing at the present day; and an inquiry into the merit of specific remedics. Also, a method of treatment best adapted to the brute creation. By James Thacher, M. D.

An Essay on the Organic Diseases and Lesions of the Heart and Great Vessels. By J. N. Corvisart. Translated from the French, with Notes, by Jacob Gates, M. M. S. S.

Dr. Jones's very important work on the Hemorrhage of divided arteries has been recently republished in Philadelphia, by Mr. Dobson.

The first number of the Emporium, a philosophical journal, by Professor Coxe, has lately appeared.

METEOROLOGICAL JOURNAL.

BY JOHN GORHAM, M. D. BOSTON.

FOR APRIL, 1812.

Day of	Thermometer 7 A. M.	3 P. M.	10 P. M.	Barometer. 3 P. M.	Wind. 7 A. M.	1 P. M.	10 P. M.	Weather. Day.	Night.
1	39°	44°	33°	30.12	N.W.	E.	N.	Fair.	Fair.
2	37	51	39	30.02	W.	W.	W.	Ditto.	Ditto.
3	40	50	39	29.93	W.	E.	E.	Ditto.	Ditto.
4	41	45	40	29.93	E.	E.	E.	Ditto.	Cloudy.
5	40	50	45	29.93	S. E.	S. W.	S. W.	Cloudy.	Ditto.
6	40	45	35	30.04	N.W.	N.W.	N.W.	Fair.	Fair.
7	40	45	39	30.31	N.W.	E.	E.	Ditto.	Cloudy.
8	36	41.5	34	30.30	S.E.	E.	E.	Snow.	Ditto.
9	39	45	36	30.21	S.	E.	W.	Fair.	Ditto.
10	44	55	51	29.50	S.E.	S.	S. W.	Rain.	Ditto.
11	47	63	51	29.53	S. W.	W.	W.	Fair.	Ditto.
12	33	42	35	30.05	N.W.	N.W.	N.W.	Ditto.	Fair.
13	40	36	34	30.10	E.	E.	E.	Snow.	Snow.
14	36	48	40	30.15	N.W.	W.	S. W.	Fair.	Cloudy.
15	43	59	45	30.23	S. W.	S. W.	S. W.	Ditto.	Ditto.
16	50	47	45	30.20	N.W.	E.	E.	Cloudy.	Rain.
17	45	54	50	29.70	S.E.	E.	E.	Rain.	Cloudy.
18	60	75	57	29.73	W.	W.	N.W.	Fair.	Rain.
19	54	57	51	29.74	E.	E.	N.W.	Ditto.	Fair.
20	48	52	46	30.10	N.W.	E.	E.	Cloudy.	Ditto.
21	45	43	38	30.14	E.	E.	E.	Fair.	Ditto.
22	40	52	42	30.14	S.	E.	W.	Ditto.	Rain.
23	50	55	43	30.18	W.	N.W.	N.W.	Ditto.	Fair.
24	45	55	49	29.70	S. W.	S. W.	S. W.	Ditto.	Ditto.
25	51	71	56	29.67	W.	S. W.	S. W.	Ditto.	Ditto.
26	52	63	48	30.10	N.W.	N.W.	N.W.	Ditto.	Ditto.
27	50	56	46	30.24	W.	W.	W.	Cloudy.	Ditto.
28	47	53	38	30.26	N.W.	N.	E.	Fair.	Ditto.
29	46	51	41	30.05	E.	E.	E.	Ditto.	Rain.
30	44	52	.43	29.96	S. W.	W.	W.	Cloudy.	Fair.

Mean temperature, 51°.5.
Mean pressure of the air, 29.90.
Quantity of snow, 4 inches.
Quantity of rain 2.40 inches.

METEOROLOGICAL JOURNAL,

FOR MAY, 1812.

Day of	Thermometer. 7 A.M.	Thermometer. 3 P.M.	Thermometer. 10 P.M.	Barometer. 3 P.M.	Wind. 7 A.M.	Wind. 1 P.M.	Wind. 10 P.M.	Weather. Day.	Weather. Night.
1	48.°	55°	43°	29.90	N.W.	N.W.	N.W.	Fair.	Fair.
2	42	62	47	29.85	N.	N.W.	W.	Ditto.	Cloudy.
3	47	45	40	29.70	S. E.	E.	E.	Mist.	Rain.
4	37	36.5	35	29.65	N.E.	N.E.	N.E.	Snow.	Ditto.
5	38	45	43	29.69	N.	N.	N.	Cloudy.	Cloudy.
6	44	47	41	29.78	N.	N.	W.	Fair.	Fair.
7	48	54	41	29.83	N.	N.	N.	Ditto.	Ditto.
8	45	54	49	29.90	N.	E.	S. W.	Ditto.	Ditto.
9	50	55	44	29.88	N.	E.	E.	Ditto.	Ditto.
10	42	61	48	30.10	N.W.	E.	W.	Ditto.	Ditto.
11	47	65	52	30 11	W.	E.	S. W.	Ditto.	Rain.
12	54	56	53	29.75	S. W.	S. W.	S. W.	Rain.	Cloudy.
13	58	65	54	29.87	N.W.	W.	W.	Fair.	Fair.
14	56	60	55	30.03	N.W.	E.	W.	Ditto.	Ditto.
15	50	57	51	29.84	E.	E.	E.	Cloudy.	Rain.
16	46	43	40	29.60	E.	E.	N.E.	Rain.	Ditto.
17	44	50	46	29.90	E.	E.	E.	Cloudy.	Cloudy.
18	43	43	41	29.90	E.	E.	E.	Rain.	Rain.
19	43	50	44	29.94	N.	E.	E.	Cloudy.	Cloudy.
20	45	57	46	30.06	E.	E.	E.	Ditto.	Ditto.
21	46	52	51	29.89	E.	E.	E.	Rain.	Rain.
22	56	63	53	29.68	W.	W.	N.W.	Fair.	Fair.
23	52	62	52	29.82	N.W.	N.W.	W.	Ditto.	Ditto.
24	47	57	51	30.	N.	E.	E.	Ditto.	Ditto.
25	53	57	50	30.22	N.E.	E.	E.	Ditto.	Ditto.
26	54	60	51	30.24	E.	E.	E.	Ditto.	Ditto.
27	55	53	52	30.04	E.	E.	E.	Cloudy.	Cloudy.
28	55	64	55	29.84	S. W.	S. W.	S.	Rain.	Ditto.
29	58	68	62	29.88	N.	E.	S.W.	Fair.	Fair.
30	64	78	64	29.89	S. W.	E.	S.W.	Ditto.	Ditto.
31	64	80	66	29.85	W.	S. W.	S.W.	Ditto.	Cloudy.

Mean temperature, 54°.
Mean atmospheric pressure, 29.82.
Quantity of rain, 5.10 inches.

METEOROLOGICAL JOURNAL,

FOR JUNE, 1812.

Day of	Thermometer			Barometer.	Wind.		Weather.	
	7 A. M.	3 P. M.	10 P. M.	3 P. M.	7 A. M.	10 P. M.	Day.	Night
1	60°	68°	57°	29.77	E.	E.	Fair.	Cloudy.
2	56	67	60	29.64	E.	S. E.	Fair.	Rain.*
3	62	56	51	29.43	N.	N.	Rain.	Ditto.
4	50	58	52	29.70	N.	N.	Var'ble	Fair.
5	60	74	65	29.60	N.W.	N.W.	Fair.	Ditto.
6	65	76	66	29.62	N.W.	N.W.	Ditto.	Ditto.
7	67	74	63	29.70	N.W.	W.	Ditto.	Ditto.
8	65	80	71	29.65	S. W.	S. W.	Ditto.	Cloudy.
9	70	81	74	29.70	W.	S. W.	Ditto.	Ditto.
10	63	61	57	29.80	E.	E.	Rain.	Rain.
11	59	62	55	29.80	N. E.	E.	Ditto.	Ditto.
12	56	57	53	29.91	N. E.	E.	Ditto.	Ditto.
13	53	54	50	30.	N. E.	N. E.	Ditto.	Cloudy.
14	53	58	50	29.90	N. E.	N. E.	Fair.	Fair.
15	60	63	63	29.88	N.	W.	Ditto.	Cloudy.
16	62	63	57	29.73	N.	E.	Cloudy.	Rain.
17	62	75	65	29.63	S.	S. W.	Fair.	Cloudy.
18	60	65	60	29.75	S. W.	E.	Rain.*	Fair.
19	61	73	72	29.89	N.W.	S. W.	Cloudy.	Show'y
20	66	80	70	29.72	W.	W.	Sh'wy.*	Cloudy.
21	64	71	65	29.90	N.W.	W.	Fair.	Fair.
22	62	68	62	29.92	N.W.	W.	Ditto.	Ditto.
23	61	77	66	30.	N.W.	W.	Ditto.	Ditto.
24	65	78	67	30.04	N.W.	W.	Cloudy.	Rain.
25	60	59	59	29.67	E.	N. E.	Rain.	Ditto.
26	62	70	66	29.85	N.W.	W.	Fair.	Cloudy.
27	63	67	65	29.84	S. W.	W.	Rain.	Rain.
28	63	67	65	29.81	S.	W.	Show'y	Fair.
29	66	73	65	29.85	N.W.	N.	Fair.	Ditto.
30	58	68	59	29.90	N.	N.	Show'y	Fair.

Mean temperature, $63\frac{1}{4}$°.
Mean pressure, 29.735.
Quantity of rain, 5.23 inches.

* Thunder and lightning.

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SOME REMARKS

ON THE

MORBID EFFECTS OF DENTITION;

MORE PARTICULARLY WITH REFERENCE TO THE DISEASES OF TEETHING CHILDREN IN SUMMER AND AUTUMN.

BY JAMES JACKSON. M. D.

(Continued from page 120.)

Of the treatment of the Diarrhœa and the Cholera.

LVIII. IN § XVIII. the consideration of the mode of cure of the diarrhœa of teething children was deferred until the cure of cholera infantum should come under discussion. On this head our limits will not permit us to be very formal and precise; nor could we hope to avoid wearying our readers if we were so. At the same time, without some order, we cannot present our opinions in a mode sufficiently distinct.

LIX. The considerations and directions relative to the treatment of these diseases may be ranged under two general heads, or divisions, viz. in reference to the remote causes, and in reference to the proximate causes.

LX. *The remote causes.* In some diseases the remote causes produce their full effects at once, or in a short space of time, and the diseases are supposed to go on in the same manner, whether

the patients do, or do not still remain exposed to those causes. It is not so in regard to these diseases. The continuance of the remote causes keeps up the morbid affections. Hence it is necessary to have reference to those causes in considering the treatment, and as far as possible to remove them. The remote causes of the diarrhœa of teething children have not been very formally stated, but a reference to the remarks on that subject will shew that they are considered by us the same in kind, as those of the cholera infantum. We will then take up those causes as stated in §XXXIX.

LXI. *Dentition.* This is a cause which cannot be altogether removed by art, but the evil effects arising from it may be in some measure obviated. The evils produced at the time when teeth are protruding, may be very much lessened by dividing the gums over such teeth. Through the whole course of these diseases it is of the first importance to watch the state of the gums, and whenever any one is either inflamed, or much distended, to divide it.

LXII. An apprehension is often expressed, that the cicatrix, occasioned by dividing the gum, will by its hardness obstruct the growth of the tooth. This is without foundation. In the process of dentition, the gum is not divided mechanically by the tooth; it is removed by absorption; and a cicatrix is more readily absorbed than a sound part. From this consideration it is important that in dividing the gum, the incision should be made in the course which the tooth takes in its growth.* Also the incision should be made to reach the tooth, and should extend the whole length of its surface. In some instances it is necessary to repeat the incision for two or three days in succession.

LXIII. *The season.* This is one of the remote causes which cannot be removed; but its injurious effects may be in some

* It is not perhaps universally observed that the teeth, especially the incisors and cuspidati, are first denuded at the anterior part of the gum. On this account the lancet should be directed first from without inwards, on the edge of the gum until it strikes the tooth, and then should be made to bear directly upon the edge of the tooth in completing the incision. In dividing the gums of the double teeth, it is well to make a crucial incision.

measure obviated by avoiding exposure to extreme heat, and by frequent washing and bathing.

LXIV. *Improper food.* The diseases under consideration are not often produced without the concurrence of this cause. It is both predisponent and exciting. Hence its importance in regard both to prevention and to cure. The expression, improper food, is relative. The same food is not proper in every case, nor in every stage of the same case. That food is most proper which can be most easily and most perfectly digested. To state in detail what food is improper, would require too extensive an enumeration of articles; it will be more easy to state what is proper.

LXV. All are ready to admit that the food provided by nature for the state of infancy is the most proper for that state. The only questions are, how long this food continues to be the most proper? and, whether it continues to be preferable to other food, when children are affected with the diseases under consideration? As regards the period for which it continues to be useful, the remarks which might be made in this place are anticipated in § XXI. In respect to the question, whether this is to be preferred to other food in these particular diseases, the answer generally is in the affirmative. At certain times, as when the symptoms of *cholera infantum* are most exquisite, the stomach will not admit of food of any sort. But when any nutritive substance can be used with safety, the milk directly from the breast of a healthy nurse, will be found the most grateful to the palate, and the most easily retained and digested by the stomach.

LXVI. Next in order of preference is animal food. This is not however next when the stomach is in the most irritable state, and when we suppose its mucous coat to be much inflamed. At this time, aqueous liquids rendered slightly aromatic, or with the addition of a small quantity of farinaceous nutriment, are the most appropriate. The circumstances, under which food of each description is to be preferred, may be determined by the following considerations.

LXVII. Animal food is the most easy of digestion, and the changes it undergoes in the stomach are effected in a shorter

timé, than those of vegetable food. But it is more stimulating when first swallowed; and if it is not digested, but is left to go through its chemical decomposition in the stomach, it then putrifies, and is more offensive to that organ than vegetable food is under analogous circumstances. Hence the following rules may be derived. 1st. When the stomach is capable of digesting food and there is some appetite, to administer animal food. 2d. When the appetite is very much impaired, or entirely destroyed, or when it appears that the digestive powers fail altogether, then the little nourishment which is administered should be of the vegetable kind. In this case the farinaceous and mucilaginous substances are to be preferred.

LXVIII. Next then to the milk of the human breast as nutriment, may be placed solid animal food in most cases. But some variety is necessary, and some proportion of liquid nourishment is at once most grateful to the palate and most agreeable to the stomach, especially in infancy. Cow's milk is the best food of this description, where the patient does not nurse. But in some instances this food will not be digested, and it is then necessary to substitute the decoctions of animal substances. In order to prevent any evil consequences from the use of cow's milk, it should be used only when fresh from the cow; it may often also be rendered more suitable by medicating it with lime water. One part of lime water may be mixed with two of milk; and, if the patient has profuse liquid stools, it is useful to boil this mixture.

LXIX. Decoctions of animal food, and the juices expressed from beef broiled or roasted, may sometimes be advantageously employed, when neither meat nor milk can be easily borne. Small quantities of arrow-root, &c. may be employed occasionally under the same circumstances. Most frequently bread may be eaten in the diarrhœa, but not often in the cholera. The hard bread, which has not been fermented, is to be preferred.

LXX. Much regard must be paid to the quantity of food and to the frequency of administering it. The quantity taken at one time should be small; for a stomach diseased and enfeebled must not be required to perform much labour, whatever need

of nourishment may be felt by the rest of the system. In some instances, where the stomach is most irritable, it is necessary that only one tea-spoonful of liquid be exhibited at a time, and this not oftener than once in half an hour, or an hour. In general the frequency of giving nourishment must have relation to the quantity. Where solid nourishment is given, time should be allowed for each portion of it to be digested before repeating the supply. This time should never be less than four hours even when the quantity is exceeding small; and generally should be six or eight hours. One important caution respecting the ingesta should not be omitted. While the utmost care is exercised to give such food as is most proper, the benefit of this care will often be lost, if in addition there be admitted any, even the smallest, portion of food which is less digestible.

LXXI. As much caution is requisite in respect to the drinks as to the food employed. They should be in general neither acid nor acescent; and should be exhibited in small quantities. Yet some latitude may be allowed in respect to acescent liquids, if care be taken to ascertain that inconvenience does not ensue; for such liquids are sometimes not only grateful, but even serviceable. In the worst cases only aqueous and spirituous liquids should be permitted. Although it is generally most prudent to limit the quantity very much; yet sometimes a full potation of some grateful beverage is very salutary. It cannot always be determined when this indulgence may be allowed with safety. In general, however, it may be tried, when the thirst is very great, when the stomach is not very irritable, and when the skin is hot and dry.

LXXII. *Restraint from exercise in the open air* is the next of the remote causes. This is a cause which it is not easy to obviate in our large towns. In these, young children cannot be kept in the open air without attendants. From this cause, from groundless apprehensions in respect to exposure to the weather, or from negligence, it happens that very few of our young children are permitted to exercise freely and habitually in the open air. Although in some cases the operation of these causes may be obviated, yet in the majority of instances this restraint cannot be sufficiently removed. Children should be kept out of

the house three or four hours in a day, avoiding the evening when cool; and, when extremely hot, the noon time. They should not however be kept in the house all day, except for very bad weather. When affected with the diseases under consideration, these rules should be complied with as far as the strength of the subjects will permit.

LXXIII. *Impure atmosphere.* The impurity referred to (§ XLIX.) is that which belongs to cities. The removal from town to country should always be advised in alarming cases of the diarrhœa or cholera, where the measure is practicable. It is even to be advised as a measure of prevention, where these diseases are threatening. One practical caution is necessary on this subject. When a patient has been apparently restored by such a removal, he should not be returned from the country while the unhealthy season continues; that is, until after the middle of October. By neglecting this caution, many lives have been lost.

LXXIV. *The proximate causes.* We come now to state the considerations and directions relative to the treatment, as they refer to the proximate causes. So far as any of these have been stated in the preceding remarks, it is unnecessary to repeat them. In addition to such, the following indications are to be kept in view.

1st. To remove all noxious matters from the stomach and bowels.

2d. To counteract the evil effects of such chemical changes as may take place in the contents of the stomach.

In pursuing these two indications one general purpose is to be attained. This is to remove irritating substances from the stomach and bowels, or, which is the same thing, to destroy their power of irritating those organs. By following the directions in respect to diet already laid down, the further introduction of such substances will be in great measure prevented.

LXXV. By these means not only the diarrhœa will be greatly relieved, but in many instances the symptoms of cholera infantum, when that disease has not been of long continuance, will also be removed. In such instances, the 6th indication mentioned below must next be fulfilled. When however in cholera the symptoms remain unsubdued, we have—

3d. To produce a change in the secretory actions of the diseased organs, and of their subsidiary glands, the liver and pancreas.

4th. To excite the action of the capillary vessels in other parts of the system, and thus to equalize the circulation.

LXXVI. In most instances it is necessary, from time to time—

5th. To lessen the irritability and sensibility of the diseased organs.

In all cases after the preceding indications have been fulfilled, it is requisite—

6th. To increase the tone of the system generally and particularly that of the stomach and bowels.

LXXVII. The first indication is *to remove all noxious matters from the diseased organs.* These are organs which cannot be left entirely without contents for any length of time. Nature demands that something be swallowed occasionally in all cases, and the secretions of the parts and those connected with them are continually flowing into the canal. The matters which are swallowed will often undergo chemical changes in consequence of the inability of the stomach to perform the function of digestion. The matters secreted are often changed in quality in consequence of disease, and become unusually adhesive, or unusually acrimonious, or both. From the state of the organs, their excrementitious contents are not conveyed through them as rapidly as usual, although constant efforts and frequent evacuations are taking place. Now these efforts must be rendered more effectual, and these evacuations more copious, in order that the alimentary canal may be relieved from irritation.

LXXVIII. To produce the evacuations which are necessary, various articles of the materia medica may be employed. In the early stage of the *diarrhœa*, when it is not violent, almost any evacuant will effect the purposes proposed; and, especially in July and August, when the disease more readily yields to medicine than in the autumn. But in proportion as the disease has grown violent, and as the season is advanced, it becomes important to select such remedies as are in some measure capable of answering other indications.

LXXIX. First, it is desirable to excite vomiting, both because the stomach is more perfectly evacuated in this way than by purging, and because that organ often acquires tone from this act. Yet if a rough emetic, such as the preparations of antimony, be employed for this purpose, it will frequently happen that the effects will be too violent and too long continued, and that the energy of the stomach will thus be impaired. The powder of ipecacuanha is to be preferred for this purpose; and this should be administered in small doses. Small doses will generally be found sufficient, and when they fail to operate as desired, they occasion other beneficial effects. It is seldom that any advantage will be obtained by vomiting, in the diseases under consideration, if large doses are necessary for the purpose.

LXXX. The ipecacuanha may in most cases be advantageously combined with submuriate of quicksilver, the use of which article in this disease shall presently be stated more at large. Two grains of each of these articles will often times be adequate to all the purposes desired; and when not so, such a dose may be repeated from once to four times in a day, according to the state of the stomach, and the effects produced.

LXXXI. The submurias hydrargyri is one of the most useful, perhaps the most useful medicine, which is employed in these diseases. Physicians entertaining different opinions respecting the causes of the diseases, and the mode of operation of this medicine, agree nevertheless in employing it. They employ it in different doses and in different modes, and yet all perceive some benefits to result. It is not hence to be inferred that the dose, and other circumstances respecting its use, are not of any importance; but only that they are not always of essential importance. To present this subject in one view, we will briefly state the benefits to be derived from this medicine, and the mode of using it in order to attain these benefits. This departure from the order proposed will be compensated by advantages in respect to brevity and clearness.

LXXXII. This article of the materia medica appears to answer four general intentions. First, it excites the stomach and bowels to evacuate their contents. Second, it occasions a change in

the actions of the secretory vessels of those organs, and by sympathy produces similar effects in the vessels of the subsidiary glands, the liver and pancreas. Third, probably in consequence of the last mentioned effects, it appears to produce on the stomach the effect of a tonic. Fourth, it occasions a more equal circulation over the whole body. Such are the happy effects which are often witnessed from the exhibition of this medicine, when the doses are rightly adjusted. But as the effects are sometimes modified by causes which elude our observation, the difficulty of this adjustment is very great, and it does not seem possible in all cases to do more than approximate to the desired point.

LXXXIII. First. The submuriate of quicksilver excites the stomach and bowels to evacuate their contents. This medicine is commonly ranked among cathartics, but not among emetics; but, in children especially, it does operate on the stomach also. If given alone, it often occasions vomiting, when the contents of the stomach are offensive; but more especially if used in combination with ipecacuanha, even though both articles be employed in very small doses. When the submuriate does not produce this effect, it occasions the stomach and the duodenum to discharge themselves of their contents into the intestines. Its effects are indeed much more remarkable on the stomach and duodenum than on the intestinal canal generally, while most other cathartics scarcely affect these parts at all. It often fails to occasion an evacuation from the bowels, even when it seems to have carried forward the contents of the upper to the lower part of the canal. On this account it is often necessary to follow this medicine with some other cathartic.

LXXXIV. The submuriate is often found useful when the stomach is so irritable that it will not bear any medicine more bulky, or of a disagreeable taste, long enough to have any important effect produced. In such cases, one or two grains of this article may be exhibited every third or fourth hour, until the vomiting is checked. The first two or three doses will commonly occasion vomiting; but the stomach will soon cease to eject nutriment if cautiously administered, and afterwards will

retain the medicine also. In such instances the medicine seems to change the secretory actions, and to act as a tonic.

LXXXV. When given in combination with ipecacuanha as before mentioned, its emetic effects are rendered most certain, and also its effects in producing more equal circulation over the whole system. When, however, it is more particularly necessary to empty the bowels, this medicine may be given in combination with a small quantity of the root of jalap, in very fine powder; in which combination experience sanctions the use of it. Or, the same purpose may be answered by exhibiting four to six grains of the submuriate at one dose, and following this with castor oil. When there is reason to suppose that the operation on the small intestines is completed, and that their contents are emptied into the cæcum and cólon, it is better to evacuate this part of the canal by an injection than to irritate the stomach unnecessarily by a repetition of medicine. There is reason for this supposition, when in a few hours after exhibiting a cathartic there is obtained general relief, while no evacuation from the bowels has ensued. It may be remarked in this place, that in respect to the evacuations from the bowels in the diseases under consideration, the great objects are, that the dejections shall lessen in frequency and increase in weight. Through the whole disease it is of the first importance to prevent the undue retention of fæcal matter. For this purpose the mildest remedies are the best; but we must not be deceived by the frequent discharges of mucus and bile into the supposition that nothing fæcal is retained.

LXXXVI. The beneficial effects of the submuriate of quicksilver in the cholera, independent of the evacuations it occasions, are rendered more credible by the more evident benefits it produces in a disease which comes under the immediate cognizance of our senses, and which is essentially similar to the cholera infantum, differing only in its seat. This is the disease described in § XXX. and called ulcuscula oris. In this disease the submuriate may be given in doses of one or two grains every morning, or, at first, twice a day, and at the same time a solution of sulphate of zinc, or some other astringent may be used as a wash for the mouth. Under this course, not only the mouth gets

well sooner than when left to itself, but the stomach and bowels are also relieved or cured, and the sympathetic fever and general irritation which had attended, subside in one or two days. In the progress of this cure it is not found to be immediately dependent on the evacuations which the medicine occasions, and it is therefore referable to other modes of operation of that medicine. Now under the same, or nearly the same treatment the cholera infantum will be relieved, though not quite so speedily; and when so relieved, other remedies which will be mentioned, must be employed to complete the cure. In general it should be remarked that very little benefit is to be obtained from giving the submuriate in large doses, as is perhaps too much the practice. There are cases where the organs are very torpid in which this must be done, and the doses may be often repeated. But in general, large doses do not produce any more beneficial effects than small ones, and they occasion much unnecessary evil.

LXXXVII. The diseases under consideration will often appear to yield at once to evacuations, but such favourable appearances must not be confided in. The morbid disposition at least remains, and slight errors in diet or regimen will occasion a recurrence of the disease, and often with aggravated symptoms. The cure should in such cases be perfected by attending to the sixth indication as laid down in § LXXVI. Also when relief has been obtained by small doses of submuriate of quicksilver frequently repeated, that medicine should not be too speedily relinquished. It is most proper that the dose and frequency of repetition be gradually diminished.

LXXXVIII. The second indication which is mentioned in section LXXIV. is "to counteract the evil effects of such chemical changes as may take place in the contents of the stomach and bowels." The changes which take place are produced by putrefaction of animal food, and the acetous fermentation in that which is vegetable. In the first case, that of putrefaction, the evil cannot be much limited even in a sound stomach, still less in a feeble one. In this case the effects can be obviated only by the rejection of the substance from the stomach. This is often effect-

ed by the spontaneous efforts; but when it is not, that organ should at once be excited by an emetic.

LXXXIX. The changes produced in vegetable food are more to be guarded against, because more frequent; but they are much less offensive to the stomach than those which take place in animal food. The evil, in the case of vegetable substances, may often be remedied by alkaline medicines. For instance, when the patient is costive, by magnesia; and when loose, by lime-water, or carbonate of lime. Or, when it is not desirable to administer either a laxative or an astringent, then the carbonate of potass or the carbonate of soda may be given. To these it is useful to add some mild carminative, as in these cases flatulence is often a very distressing symptom. In this way the contents of the stomach may be rendered less noxious, and thus that organ will be allowed to recover its state of health.

XC. Respecting the third indication enough has perhaps been said in considering the effects of the submuriate of quicksilver. The fourth indication is "to excite the action of the capillary vessels in other parts of the system, and thus to equalize the circulation." Certain remedies, the benefit of which is established by experience, are supposed to operate in this way. These are internal and external. The *internal* are such as are found to affect the secretory system generally. Of this description are ipecacuanha and submuriate of quicksilver. The use of those articles as evacuants has been fully discussed; and it has been stated that while exhibited for other purposes, they will answer that now under consideration. There are, no doubt, other articles which will answer the same purpose; but perhaps none so perfectly as these.

XCI. The *external* remedies which may be employed for this purpose are of very great utility. These are generally such as excite the capillaries of the skin; *warm or tepid bathing*, *friction*, *rubefacients*, and *vesicatories*. *Bathing* in water from 90° to 94° Fahrenheit before going to bed, produces the effects desired in a most grateful manner. It is generally sufficient to keep the patient in the bath from six to eight minutes; the body should then be wiped perfectly dry and well rubbed, and the patient imme-

diately laid in bed, but without the addition of any extra cloathing. After this operation, the night is passed in a manner so much more tranquil than usual as, in most cases, to compensate for the trouble and fatigue attendant on it.

XCII. *Friction** is a very useful auxiliary to bathing, and may also be employed separately with very great benefit. In these diseases it may be applied most usefully over the abdomen and on the extremities. *Rubefacients* may be advantageously applied to the extremities when cold, and when the circulation is languid; but still more so over the abdomen. This is a practice which is sanctioned by experience, whatever may be thought of the mode in which its beneficial effects are brought about. In like manner *vesicatories* are extremely useful. When the stomach is very irritable, rejecting every thing which is swallowed, or when the bowels cannot be influenced by medicine in ordinary doses, vesication over the abdomen will give very great relief, and afterwards internal remedies may be employed with more success. Likewise when the patient is suffering great pain, vesication is highly serviceable. The tincture of cantharides of greater or less strength, and more or less frequently applied, may be made to answer both the last mentioned purposes, viz. that of a rubefacient and that of a vesicatory.

XVIII. The fifth indication is "to lessen the irritability and sensibility of the diseased organs." This indication may be, in a considerable measure, answered by the methods already proposed. The removal of the offending substances not only lessens irritation and pain, but also occasions a diminution of the morbid irritability and sensibility. But, however, it is often necessary to employ remedies especially for this purpose. Preparations of opium are most commonly exhibited, and with very great benefit. Whether hyosciamus, or any other narcotics, can be employed with the same advantage, I am unable to state. Respecting opium, while this remedy is capable of being ex-

* The extensive utility of warm bathing and friction is much insisted upon by an eminent practitioner of this town. I shall always be ready to acknowledge that I am indebted to that gentleman, for having formed a sufficiently high estimate of the use of those remedies.

tremely useful in the diseases under consideration, so it may be extremely injurious. It is therefore necessary to consider the conditions and cautions to be regarded in the administration of it. In some constitutions it is always found injurious; and in all cases it has a tendency to injure the stomach. In most cases, but not in all, this injury is more than balanced by the benefits it produces.

XCIV. In general, opium should be administered only when the bowels have recently been evacuated, so that there may not be any hazard of retaining fæcal matter in them; or when some cathartic is exhibited at the same time, so as to obviate constipation. After artificial evacuations, when frequent dejections are still occurring, opium should be administered in small doses and repeated after each motion. In this mode of administration the quantity exhibited will be proportioned to the disease. If the skin be dry and hot, the opium may be united with small doses of wine of ipecacuanha; or, if the strength be much exhausted, to this may be added, the water or tincture of cinnamon. If the discharges are copious and thin, tinct. of kino, with prepared carbonate of lime, may be added to the above. In cases where the patient is much exhausted by pain and frequent evacuations, it is sometimes useful to administer a full dose of opium at night, so as to give a respite from suffering for some hours, and allow the system time to recruit its forces. The success of this practice is however various, and it should be discontinued if the patient be found on the following morning to be feeble, relaxed, and without appetite, with heavy eyes and a dry tongue.

XCV. The sixth indication, and the last, relative to the proximate causes, is "to increase the tone of the system generally and particularly of the stomach and bowels." This is to be fulfilled by the exhibition of tonics and cordials; by great care in respect to diet, in order that the most nourishing food, and that which is easy of digestion, may be employed; and by exercise in the open air.

XCVI. *Tonics and cordials.* To detail all the circumstances to be regarded in using articles of this description, in selecting those most proper for each case, and in determining the frequency of repeating the doses, would make it necessary to add

too much to the length of this paper. There is to be observed between the remedy exhibited on the one side, and the degree of disease, the strength of the patient, his irritability, and the precise state of his stomach on the other, a certain proportion and adjustment, which calls for all the judgment, watchfulness, and nice discrimination of the practitioner; and which require that which may be attained by practice much more easily than it can be taught to others. In respect to the articles to be employed, no doubt each of the tonics may be sometimes used with advantage. In general preparations of the bark of cinchona, or of angustura, with the addition of some aromatic, particularly of cinnamon, will be found most useful. The decoction of these articles, to which may be added a small proportion of brandy, is generally to be preferred to other preparations of them. The preparations of iron, such as the tincture of the muriate of ammonia and iron, or the carbonate, may be occasionally substituted for the vegetable tonics with great advantage; and sometimes, where the latter are very disgusting, the former being given in a small compass are much more easily administered. Wine and brandy may be employed, with the utmost advantage when the patient is greatly enfeebled, and is unable to take or to digest much nourishment. Wine is to be preferred to brandy when it can be obtained in a state of tolerable purity, and when it does not become sour on the stomach; in *other* cases brandy, or alcohol in other forms, should be directed.

XCVII. Having thus suggested the remedies to be employed with a direct view to the proximate causes of the diseases under consideration, it may be useful to revert to the great importance of the remote causes, and the necessity of regarding them in the treatment. In some instances it is found that pharmaceutical remedies, aided by a well regulated diet, are employed without any, or with only partial and temporary benefit. This happens when the patient has become much debilitated, while the remote causes continue to operate, and thus constantly to perpetuate the proximate cause. In such cases the pharmaceutical remedies should be given up, at least until some favourable change has taken place in the system, and attention should be paid only to remove or avoid the remote causes. At the same

cannon ball, was capable of pressing surrounding bodies with sufficient violence to tear their substance; but how can we conceive of such a pressure in the midst of the free air? The effect observed ought to be produced constantly, when a ball passes near; but we may every day see bullets carry away the plume, the hat, the clothes, and even the hair of the soldier, without his experiencing any other inconvenience.

The oblique action of balls on the human body easily explains this extreme contusion, in which the skin is not affected. Sometimes also it depends on the weakness, with which these balls strike, when having expended the greater part of the motion impressed on them, they act only by virtue of their weight. They are then designated by the name of spent balls.

When the contusions of fire arms are pretty violent, the muscles and cellular membrane bruised, and reduced to a kind of jelly, similar to the lees of wine, the bone sometimes broken; the limb is often in a state of torpor, which inevitably brings on gangrene.

Gun-shot wounds may have only one, or they may have two outlets, the ball being arrested more or less deeply in the thickness of the part, or having passed quite through it. In the last case the two openings are diametrically opposite, in the greater number of instances; pretty often, however, the outlet does not exactly correspond with the entrance of the ball, its direction having been changed by the resistance opposed to it by a bone, a cartilage, a tendon, or even an aponeurosis. Thus a bullet, having pierced the skin of the leg near the internal ankle, has been known to glide between the tibia and the skin, ascend and come out near the knee; sometimes having struck the forehead, it has issued at the temple, etc. Books relate a great many instances of these singular deviations. The directness of a ball's course will be in proportion to the rapidity of its motion, and also to the softness of the parts it passes through.

The wounds of musquet balls generally have the form of the body which produces them; they are round, square, or oblong; but when they have two openings, that at the entrance is always larger than that at the exit of the ball. Its edges are depressed; there is a depression near the entrance, while the parts are, as

it were, raised, and make a projection towards the other opening. This difference takes place, because at the moment the ball meets the limb, it strikes it with its full force, which it loses when it is buried in the thickness of the parts, in overcoming their resistance. The skin at the entrance is supported by the whole thickness of the limb; this point of support favours the solution of continuity and prevents laceration; the contusion is also, for the same reasons, greater at the entrance of the ball, and when the swelling, which is always proportionate to the contusion, has taken place, the difference between the two openings is more strongly marked; for the entrance is more swelled than the outlet. These explanations are so well founded, that Le Dran, speaking of wounds of the head, remarks, there is no difference between the entrance and outlet, because the point of support is of the same nature.

The livid yellow colour of the parts around a gun-shot wound, arises from the ecchymosis produced by the violence with which the blood is driven back; the slough preventing the escape of the humours. They swell the part, and much increase the importance of the wound. The part struck is benumbed, weighty, and in this state of torpor defends itself feebly against the entrance of liquids; the organic activity being almost extinguished, gangrene comes on and makes the most rapid advances. This state of stupor and insensibility is especially fatal, when the whole body experiences it, and this takes place in consequence of severe commotions, as when the body is struck by a large ball, or any other body of a certain bulk. In this state died the light horseman of whom Quesnay speaks: the state of stupefaction was such, that when they proposed amputation, the man answered "it was none of his business."

Jaundice is seen to occur suddenly from gun-shot wounds; also, shiverings, faintings, and other nervous accidents, which caused the old surgeons to believe that gunpowder carried a secret poison into wounds; but the attrition which organs undergo, and the violent shock, of which the whole system partakes in a greater or less degree, are sufficient to explain the most mischievous consequences.

The complication arising from foreign bodies concealed in the wound, often exists in this species of injuries. These bodies are, either the ball itself, or portions of the clothes, which it has carried into the flesh. When the wound has but one opening, it very probably contains a foreign body: this is not certain, however; a number of cases are related, in which the ball, after making a deep wound of some inches, has been found in the shirt of the wounded man. In these cases the linen is not even torn, but merely driven into the wound.

When this has two openings, we may conjecture that the ball has passed out; but even then, fragments of the clothes may remain in the passage, and this is the more easy, because these bodies being lighter, and pushed with a less force than the ball, are not capable of passing through an equal space.

Thus then the first indication in gun-shot wounds is to proceed to the search of foreign bodies, with which it may be complicated. Nothing can contra-indicate this search, but the danger of causing an unmanageable hæmorrhage, by detaching the slough. A variety of ball forceps have been invented either to discover or extract the balls and other foreign substances, which the wound may contain. The finger is preferable to them all, when it is capable of reaching the foreign body; for the resistance made by bones and tendons, which lie in the course of the wound, may easily pass for some extraneous body.

The best forceps are perhaps those recommended by Mr. Chevalier. They are of two kinds; one for the extraction of balls, which is nearly like straight tooth forceps, except that the swell near the extremity is more considerable, for the purpose of receiving the ball. The other forceps are formed like common dressing forceps, but are of a greater size. A silver instrument has been invented, the form of which somewhat resembles that of an unblown tulip, the leaves of which are contrived to expand after the instrument has reached the ball, and thus having received it into their cavity, to close and retain it.*

* This is not a modern invention. We find in Dionis the figure of an instrument of very similar construction, which he calls *Alphonsin*, from the name of the inventor.

It is useful in searching for foreign bodies, with which gun-shot wounds may be complicated to cause the patient to be placed in the situation he was, when he received the wound. By means of this precaution, and carefully feeling the parts about the wound, Ambrose Paré discovered, in the Marshal Brisac, a ball placed between the shoulder blade and the spine, which had escaped the search of many surgeons, who had employed the probe alone.

It must not be forgotten that balls sometimes deviate from a straight course, in a very singular manner. In order that they should undergo these deviations, it is not necessary they should meet with bone, cartilage, or tendon. The mere difference of medium may produce a kind of refraction; for since water is able to turn a ball from a right line, the soft parts of the body will produce this effect in a greater degree, as their density is greater than that of a simple liquid.

These deviations of balls may cause us to believe that they have penetrated a cavity, whose surface only they have passed over. Such no doubt was the case of a young drummer of the Swiss guards, who received a wound in the shoulder on the 10th of August. The ball had struck under the clavicle, and passed to the inferior angle of the scapula. Professor Boyer extracted it by making a counter-opening. How could it pass through the upper part of the breast without wounding any of the important organs it must meet in its passage? Besides, it presented asperities, which evidently proved it had rubbed against osseous parts.

Sometimes, the nicest examination is not successful in discovering them; their passage is so tortuous, and they are so much refracted by the hard parts they meet in the way, that it is impossible to get at them. Then, by carefully examining the parts about the wound, and especially the part diametrically opposed to it, we perceive a foreign body through a greater or less thickness of parts, which it is necessary to incise, in order to extract it. We determine to make these counter openings the more readily, because a ball never can be extracted by the passage it had entered, without a considerable and painful traction on the parts. The new opening also facilitates the discharge of pus,

and singularly shortens the cure, which is rendered tedious by the lodgment of this fluid, when the wound has only one outlet.

We must spare neither time nor pains for the extraction of foreign bodies; for their presence is a continual cause of irritation, they aggravate the accidents of wounds and make them degenerate into fistulas; sometimes however, balls lie closely lodged in bones, during a long series of years, without danger and without pain. In some cases they pass a long way under the skin, making their way through the cellular membrane, without bringing on inflammation. The passage is then usually marked by the appearance of a reddish line in the skin. Balls have been seen to become a cause of irritation after they had been a long time quietly lodged in the body, bringing on a suppuration which removed them. We should not be too obstinate in searching for extraneous substances; because a very long and painful search might cause worse accidents than the matters lodged in the wound. When they are very difficult to find, we must abandon their expulsion to nature, or at least wait for symptoms to determine our course.

Is it always necessary to enlarge gun-shot wounds by incising their orifices? Some authors have laid down as a general rule the dilatation of these wounds. This operation, say they, besides that it singularly facilitates the search for foreign bodies, prevents the strangulation of the parts, when their inflammatory swelling comes on. More timid practitioners have gone so far as to forbid dilatation in all cases. According to them, these incisions increase the local disorder, facilitate gangrene, and are not without danger to the nerves, the vessels, and the tendons, which may be implicated in them. It is true that this practice has been carried to excess; but the proscription of its abuse ought not to be extended to its use: it is therefore indispensable to determine the cases in which it may be necessary.

Dilatation is not useful in wounds of parts not very fleshy, such as the cranium, the lower part of the leg, the foot, the wrist, and the hand. The great number of nerves and tendons in the parts last mentioned, renders every incision dangerous. We have no reason to apprehend excessive swelling in these parts, except perhaps in the palm of the hand, where the mus-

cles are pretty numerous, and of some thickness. The extraction of foreign bodies is easy in the parts just mentioned. A soldier of the Parisian guard received a ball in the back of the hand; it was fixed in the space between the third and fourth metacarpal bones; being seized with a pair of dissecting forceps it was easily extracted. The wound was not enlarged, but simply covered with a pledged of cerate; it got well without difficulty. We may therefore consider dilatation as useless in slightly fleshy parts, where the swelling is of course very circumscribed; it is dangerous, whatever may be the part wounded, when there is torpor; the solids, whose vital properties are enfeebled, would fall into a total relaxation, and gangrene would be the inevitable consequence.

Dilatation is *positively* indicated, it is indispensable only in cases where the limb has been traversed by a ball, in the most fleshy part, in a place where the muscles are covered by an aponeurosis, more or less thick. Suppose for a moment that the thigh has been pierced in its most fleshy part, without injury to the femoral artery or bone. The inflammatory swelling which must inevitably supervene, will at least double the bulk of the muscular mass, and the aponeurotic covering will resist the swelling; the pain which will result from the swelling, together with the humoral infiltration, will infallibly bring on gangrene. Dilatation is indicated to prevent a dangerous strangulation; we should enlarge the orifices of the wound, not for the purpose of changing its round form, which the old surgeons thought extremely pernicious, but to relax the aponeurosis *fascia lata*.

To perform this dilatation, we employ a probe pointed bistory; the fore finger is to serve for its conductor. The aponeurosis itself must be slit for some inches extent; and in order that the muscles should not form a muscular hernia through this simple longitudinal incision, we cut the fascia across, or even in various directions, if it is judged expedient.* We must unbri-

* M. Richerand's rule for dilating gun-shot wounds seems too limited and yet too general. It is too limited, because it confines dilatation to a limb, or to the fascia of a limb, whereas it may be proper in other parts of the body, which are suffering from inflammatory tension. It is too general, because it directs dilatation in all cases where a limb has been shot

dle the whole extent of the wound, deeply if possible, always avoiding those places, where anatomy teaches us that important nerves and blood vessels are situated. For this purpose, a bistory is to be employed with a straight and long blade, terminated by a button similar to that of Pott's probe pointed bistory; it should be made to cut by pressing on its back with the fore finger of the left hand, which is preferable to all other directers. When the wound is so far unbridled that the muscles cannot be confined by the aponeurosis, in the swelling, which is to take place, is it necessary to pass a seton through the passage of the wound?

Many practitioners advise it, and employ it, as they say, to favour the suppuration of the wound, and the separation of the sloughs. But ought we not to consider the seton as a foreign body, whose presence increases the irritation and the inflammatory swelling? The seton is never changed without producing great pain, especially when a nervous cord runs near the wound. The sloughs separate, when once the suppuration is well established. The seton is then dangerous in many cases, and when it does no harm, it is at least useless.

through. Mr. HUNTER tells us it is impossible to state what wound ought, and what ought not to be opened; but that we must convince ourselves of the necessity of dilatation from the circumstances of the case, and see clearly that some good is to be done by it. He prefers dilating after the first inflammation has subsided. In Mr. CHEVALIER's admirable treatise on gun-shot wounds, nearly the same principles are laid down. We may perhaps venture to state, 1st. *That any part may be dilated, which by its inflammatory tension produces dangerous constitutional irritation: provided that the structure of the part does not prohibit.* 2d. *That the time for dilatation is when inflammatory tension exists, and when of course, the utility of an operation is sufficiently conspicuous.* M. Richerand deserves the reputation of restricting the dilating practice within narrow bounds compared to what his immediate predecessors directed. M. Percy would have the wound dilated upward and downward, not only through the external parts, but the whole depth of the wound; to effect which it would sometimes be necessary, in a muscular patient, to open the limb from one end to the other. The fascia must be hacked like a saw (*dentelé*) and if the bone is shattered, all broken pieces are to be fairly exposed, and some portion of the sound bone must also be uncovered!

To chance, and not to his genius, did Ambrose Paré owe the useful discovery of the true method of treating gun-shot wounds. The surgery of his day, ignorantly cruel, applied spirituous and caustic applications to these wounds. Paré, when employed in the French army at the siege of Turin, himself followed this murderous practice; but having exhausted the store of remedies commonly employed, he was compelled to use simple digestive applications, and found his patients much better under the use of them, than when treated by the old method.

After the extraction of foreign bodies, and properly unbridling the wound, gun-shot wounds require the same treatment as common contused ones: the application of pledgets of lint, covered with simple digestive ointment, together with spirituous and resolvent fomentations for the first twenty-four hours, after which, emolient cataplasms, are to be applied over the lint.* As we must expect an inflammatory swelling, proportionate to the violence of the contusion, a copious bleeding is indicated, when the subject is young, vigorous, and has not experienced too violent a shock. If there should be a general stupor, or even if it be merely local, we must abstain from bleeding and employ tonic instead of antiphlogistic remedies.

All practitioners, who have written on the treatment of gun-shot wounds, concur in declaring the utility of emetics, administered on the very day of the accident, or on the day following, before the appearance of inflammatory symptoms. This practice is particularly advantageous in armies, where, from the use of bad food, and inevitable irregularities in diet, the alimentary passages are crowded with impurities. Lamartinière, in a memoir inserted among those of the ACADEMY, has particularly insisted upon this evacuation, for preventing the traumatic fever from degenerating into one of a bilious or putrid character. This fever kindles up, the wounded part swells, suppuration takes place through the passage of the wound, detaches and sweeps away the sloughs which cover its surface; after the complete separation of the slough, the wound is reduced to the

* There seems to be no satisfactory reason, why poultices should not be applied in the first instance.

condition of a common contused wound, and requires the same treatment.

We have hitherto supposed the cure not to be retarded by any particular accident; it is nevertheless, exposed to all those, which are capable of retarding the cicatrization of suppurating wounds. Sometimes also a hemorrhage takes place on the separation of the slough. The well educated surgeon will foresee this accident from the relation of the wound to the situation of important arteries; he will place an intelligent assistant near the patient, with instructions how to check the hemorrhage, till effectual aid can be given.

The wounds of fire-arms, complicated with fractures of bone, are much more dangerous than those we have hitherto spoken of. A greater or less commotion always accompanies these fractures, which are called comminutive, because the bone is broken into a number of fragments. Musquet balls less frequently produce these effects than cannon balls, pieces of bomb, and other large bodies. In sea fights, there are few slight wounds; the cannon balls dismasting the ships, the sailors are crushed by the weight of the spars; the splinters of wood, separated from the body of the vessel, are thrown with violence upon the combatants, and fracture their limbs, unless they completely tear them away. What is to be done under such circumstances? Is amputation proper in all cases of comminutive fractures with wound and excessive contusion of the soft parts, whatever be the cause which produces them?

There was a time, when a much greater number of amputations were performed in the armies of the other nations of Europe, than in the French army. This practice, though dictated by an inhuman policy, was the most advantageous, according to the opinion of Bilguer, surgeon general of the armies of the king of Prussia. According to him, amputation is rarely indicated, and we ought almost never to have recourse to it. The dissertation, in which he unfolds these principles, was the subject of such scandal in France, that Lamartinière, then at the head of French surgery, thought it his duty to refute it in a memoir, which is inserted among those of the Academy of Surgery. It was suspected that Bilguer had accommodated his

doctrine to the views of the great FREDERIC, who being the king of a poor country, was not fond of multiplying invalids at the expense of the state.

It might seem that in cases where a limb is entirely carried away by a ball, amputation would be unnecessary; but this is one of the cases in which the necessity for performing the operation is best established. How could a wound get well, in which the flesh is torn to shreds, the bone splintered, and the whole limb disorganized. How long should we have to wait the separation of the sloughs? What an enormous suppuration would take place in the midst of so much disorder? The fractured bones have received so violent a shock, as perhaps to affect the articulation; the splintered part may extend into it. If the patient escapes the accidents, which first occur, will the cicatrization of such an uneven surface be possible; and what firmness would the cicatrix have after it formed? All these considerations must decide us to practice amputation upon the spot, on limbs carried away by a cannon-ball, or by any other body thrown with great violence. The operation is to be performed at some fingers breadth above the wound, unless we have reason to suspect that the fracture extends to the joint above. In case a ball had carried away the foot at two inches above the ankle, perhaps it might be better to amputate the thigh, than to cut off the leg below the knee. The same would be proper in the arm. If the arm should be carried off near its upper part, the shoulder joint must be amputated. Instead of amputating the hip joint, the osfemeris may be sawed off near the joint. The end proposed in all these operations is to substitute, for a torn, and horribly contused limb, a simple wound, whose even surface is capable of a quick and regular union.

A second case requiring amputation, is when the limb is so much injured, as to be threatened with inevitable gangrene. If the bone is splintered into a great number of pieces, the flesh excessively bruised and reduced by contusion almost to a jelly, and the solids confounded with the extravasated fluids, the mortification of the limb is then certain, and amputation must be practised on the spot, before the storm of inflammatory accidents commences, and a burning fever is kindled.

If the favourable moment has been lost, or if having wrongly judged it possible to save the limb, the wounded parts sphacelate, yet the patient resists the ravages of disease, we must then amputate at the boundary line between the living and dead parts, waiting however till that line be decidedly marked.

A fourth case for amputation is, when the inflammatory swelling, having been happily combatted by bleeding, and an antiphlogistic regimen, terminates in such a copious and continued suppuration, that the life of the patient is threatened by a hectic.

Surgeons have been divided as to the propriety of amputating on the field of battle. It seems to be proper, when the wounded man, is to be immediately transported to a distant hospital. The difficulty of transportation, the inconvenience of the waggons, in which the patients, lying in heaps, are exposed to the most painful jars; the splinters of bone continually penetrating deeper from the motion of the carriage, thus carrying the laceration and contusion, already great, to the utmost extreme, while the patient is illy protected against the external air and storms, all impress on us, the necessity of immediate amputation, to save the patient from cruel tortures, and an agonizing death. It is true that amputation at the moment the system is suffering the general commotion, occasioned by the shock, does not succeed so often, as in cases where the necessity is brought on by consequent accidents. But although this be admitted, it is not probable that so large a proportion would be saved by deferring the operation, because they would fall sacrifices to fever, inflammation, gangrene, &c.*

What method of treatment is to be pursued in cases of gun-shot wounds, where the injury is not great enough to render amputation necessary, and in which however, the derangement is considerable? The incisions proper for unbridling, for discharging extravasated fluids, as well as for facilitating the search and extraction of foreign bodies, having been practised in the

* Mr. Hunter states it as the result of experience, that few have done well, who had their limbs cut off on the field of battle; while a much greater proportion have done well, in similar cases, who were allowed to go on till the first inflammation was over, and underwent amputation afterwards

manner pointed out above, we must place the wounded limb on a bolster, made of the husks of oats; a splint-cloth is to cover the bolster, and upon this splint-cloth we are to place the separate strips of the bandage of Scultetus, or many tailed bandage; then, a certain number of long compresses. All this apparatus is to be wet with camphorated spirit, or some other discutient. The wound is to be dressed with lint, the pledgets of which are covered with some relaxing substance, such as common cerate. Over these pledgets we apply the compresses, then the strips of bandage, as in any other compound fracture. Three bolsters of the husks of oats, and upon these bolsters three splints are to be applied, one before and the two others laterally, the two last, having been first rolled in the splint-cloth, so that there should remain only room sufficient to place the bolster. All these are to be tied moderately tight by a sufficient number of bands placed over the splints. The wounded limb is then to be laid on a pillow so fixed as to form an inclined plane toward the body. In this way, we favour the return of the fluids, which is often difficult, on account of the shock produced by the commotion, and we have less to fear from gangrene, by the stagnation of the fluids.

One or two bleedings are to be performed immediately, provided the subject is young, vigorous, and has not lost much blood, which is commonly the case, for the surface of the wound, reduced to a slough, is dry, unless a large vessel has been wounded. In case of commotion and stupor, we must abstain from bleeding, and prescribe a generous cordial by spoons-full, together with wine and other tonics.* Next we are, as before stated, to give an emetic and keep the bowels open by gentle purgatives. This practice is good, not only in gun-shot wounds, but in all cases of compound fractures among the lower class of people who are generally loaded with indigested food.

In the first twenty-four hours after the injury, the swelling and inflammatory fever commences. We must then apply poultices to the limb, and substitute a fomentation of marshmallows,

* Local bleeding by leeches is recommended by the best authors, when the inflammatory swelling is great.

or other relaxing herb, for the resolvents first applied.* The patient must be dieted; he must have acidulous, cooling, and diluting drinks, according to his taste and the season of the year.

If the inflammation terminates in gangrene, we must amputate, with the precautions already mentioned. If in suppuration, the quantity of pus will be proportioned to the extent and importance of the injury. The sloughs separate, the pus removes them, the wound cleanses, and the splinters reunite to the bone, when they have been partially separated.

The disease now makes rapid progress towards the cure: but in the greater number of cases, the termination is not so favourable. The quantity of pus, instead of diminishing, increases, and instead of being white and inodorous, as at first, it becomes sanious, fetid, and green coloured. Its abundance is such as that in spite of the closest dressing, and the most methodical compression, it is absorbed and carried into the mass of the blood, where its presence excites the purulent hectic fever. The fragments of bone, being bathed in pus, do not consolidate; local sweats and colliquative diarrhœa bring on a marasmus, which carries off the patient in a few weeks. When the first symptoms of hectic appear, we must combat them by the internal use of tonics, as has been mentioned in speaking of suppuration. But when in spite of these the colliquative diarrhœa occurs, we must haste to save the patient by the amputation of the limb. The state of weakness is, as Bell remarks, favourable to amputation; but we are not to wait, as this author recommends, till the strength of the patient is exhausted.

When particular organs are wounded, the treatment will be modified, according to the nature of those organs and the extent of the wound. This will easily be done by a surgeon, who has correct ideas of anatomy and pathology.

* Mr. Chevalier points out another case in which it is important to avoid bleeding. After the occurrence of profuse hemorrhage from gun-shot wounds, or a too free use of the lancet, the pulse becomes full apparently, and appears to demand a repetition of bleeding. But the apparent fulness of the stroke arises only from diminished tone and resistance in the coats of the artery, in consequence of weakness. They are dilated by a slighter impulse of the heart than usual. If the surgeon, misled by this pulse, takes away more blood, the patient will certainly die in a few hours.

REMARKS ON COLD BATHING.

BY J. G. COFFIN, M. D.

In the course of these remarks, which are intended for the well only, I shall notice some of the causes which have prevented a more general use of the cold bath; assign the rules by which it should be conducted; and add something concerning its advantages.

The idea of plunging into cold water, or of applying it to the surface of the body, is to most people quite formidable, and this fear, attended with doubts of its utility, is sufficient to deter many from trying it. Some individuals have not given a thought to the subject; others have bathed under improper circumstances, have been injured in consequence, and will bathe no more; while a small proportion only of the inhabitants of New-England have understood the theory of bathing, and have practised it with equal pleasure and advantage. And yet it must be admitted, that ablution in some form or other, is incumbent on all who think health worth preserving, or who would move in a pure atmosphere. It may be said too, as a cause of the neglect of this practice, that even physicians, till lately, have but little attended to this great means of cleanliness and health, and that they have afforded but slender instruction or encouragement to those inclined to adopt it.

It has been, and still is, a very prevalent sentiment, that we must not go into cold water when warm, but must wait till we are cool before we bathe. So fundamental and important is this error, that cold bathing will never become a general or popular practice, because it can never be a safe one, till it is completely corrected and exploded.

How has it happened that certain persons who have bathed under every favourable circumstance, excepting that only of

temperature, have been injured? Because they have gone into the water when they were cold.

In all these instances, had the animal heat been raised by exercise to a genial warmth before the operation, the effect would have been not only safe, but exhilarating and tonic. It is a familiar fact, that a certain degree of heat is necessary to support life, and that a higher degree is requisite for health. Successive subductions from this heat are followed by inconveniences, disease, and ultimately, death. Cold bathing is at first, and for a short time, a cooling process, and the mischief from going cold into the water arises from such a reduction of temperature as disturbs or, for a time, suspends, those operations of the system on which the evolution of heat depends, and as thus, prevents that reaction, that glow of warmth, which is at once the attendant and proof of salutary and refreshing bathing. Where there is a tolerable share of strength and a suitable elevation of temperature, it is believed that this reaction never fails to take place. If it should be asked, whether heat on the other hand, may not mount too high to admit of bathing in safety? I reply that it seems never to do so unless it arises from a degree of exercise so violent as to derange at the same time the important functions of the circulation and breathing. I would not, for instance, advise a man who from a furious contest at cricket, running, or any other excessive exertion had raised his temperature to 106 or or 108 degrees, accompanied with a feverish rapidity, and fulness of the pulse, and an almost convulsive respiration, to dive into the sea; but I could assure the same man, that if at another time his heat should ascend to the same height from common walking, under a meridian sun, that nothing else would so soon reduce him to the standard and sensations of health; from which the only deviation in his case would be, excess of temperature.

The first *rule* then to be observed in taking the cold bath is, *not to go into the water when cold.*

For several years past from May to November, I have been in the habit of walking or riding on horseback freely till 12 or 1 o'clock of the day, hastening to the water's edge, and plunging in with the least possible delay; and in no instance have I regretted the habit, but on the contrary have found it alike grate-

ful and invigorating. On many of these occasions, as must be supposed, the temperature of the body was very considerably augmented, both from exercise and atmospheric heat, and sometimes there was a free perspiration. But while the body remains strong and an elevated temperature is sustained by a continued operation of the calorific powers of the system, pretty free sweating *at its commencement*, forms no objection to cold bathing, in my opinion.

But when at the close of the labourer's day, the strength has been exhausted by uninterrupted exertion, and the heat of the body has been dissipated by long continued perspiration, nothing could be more hazardous than the *cold*, or more refreshing than the *warm* bath.

The cold bath should be taken before meals, when the stomach is empty.

Judging from the testimony of others, as well as from my own experience; I should recommend the hour before dinner as the best time for bathing.

The open beach is preferable to the dark and narrow limits of most bathing houses, excepting only the want of a screen from the rays of a scorching sun.

Great solar heat acting on the body while dressing, considerably lessens that refreshment, which would otherwise continue to be longer felt, after performing this indispensable part of the regimen of health.

The last rule I shall offer is, *to stay but a short time in the water.* The first effect of the application of cold water, to the skin, is to constringe the vessels on the surface, and to propel the blood to the centre of the body.

The organs of the circulation, roused to increased action, by an augmented influx of their appropriate stimulus, send back the blood to the surface, producing heat and redness of the skin.

But should the bather remain in the water, not only till this reaction had taken place, but till the attending warmth, should be imparted to a colder medium, than that we inhabit, he would return from it chilled and shivering, and without great care and activity, in regaining his lost heat, by warm clothing, brisk exer-

cise, &c. he would be exposed to much suffering, for his temerity. Many boys, and indiscreet persons, are every year injured in this way. To plunge two or three times, and to remain in the water one or two minutes, is abundantly sufficient, for all the good purposes of cold bathing.

The luxury, the delightful effects, and even the moral tendency of bathing, have been long since noticed, and recorded; but instead of laying this evidence before the reader, I content myself, rather with the suggestions of reason, and the more recent testimony of experience, to sanction the practice I commend. The grateful sensations, the refreshment, and renovated vigour, corporeal, and mental, which result from the cold bath, rightly managed, are more easily recollected than described.

One of the most prolific sources of disease, in this climate, are the frequent and great variations of our weather. Whatever therefore, can diminish the susceptibility of the human fabrick, to be thus injured, must be extensively useful. This morbid susceptibility, or tendency to disease, is accumulated by too much cloathing, and a sedentary life, in heated apartments; it is destroyed by frequent exercise in the open air, and in a remarkable degree, by cold bathing.

As a successful familiarity with danger, enables the mind to surmount the influence of fear, so the greater, more sudden, but transient impressions from the resources of art, enable the body, to pass unhurt, through the less rapid, but incessant fluctuations of a variable sky. When the feet, for example, in winter, suffer so severely from cold, as to render the whole system, restless and uneasy, and to invite disease, the pain and danger are entirely removed, by rubbing them one or two minutes, in cold water or snow, covering them with woollen hose, and walking till they become thoroughly warm. After a little discipline, this experiment will be pleasant, and the feet are not then easily incommoded, nor health impaired, by wet or cold applied to them. The best time, for this local bathing, is on rising from bed. In the same manner, immersion in cold water, counteracts the morbid susceptibility of the whole body.

Many people who experience sickness, from *taking cold*, are led by a false association, to consider cold, as a morbid agent

only, not recollecting that cold air, or cold water, modified by different circumstances, may either excite, prevent, or cure disease. The want of this discrimination, has prejudiced many against cold bathing. Every body knows, that cold, in some of its forms, or combinations, occasions many deviations from health, and it is equally true, that cold bathing, may be made to prevent, or cure, almost half the catalogue of the nosologists. In the periods of ancient simplicity, before the charms of nature, had given place to the illusions of art, it was believed, that innocence and health, constituted the principal attractions of personal beauty, and it was justly inferred, from what was even then known of bathing, that all who would improve these separate attractions, or preserve their enviable union, should visit the ocean. Hence the mythologists, represent Venus, as deriving her origin from the sea.

This is doubtless, the best cosmetic, and the only one we would recommend.

The same facts and reasoning, which explain the character and influence of temperature, in relation to the cold bath, furnish the only correct theory, respecting the drinking of cold water. So long as the strength of the body, remains unimpaired, and the important offices of breathing, and the circulation of the fluids are steady, and regular, cold liquids may be taken into the stomach, with the greater freedom, in proportion to the increased temperature and dryness of the skin.

According to my observations, after having made a free use of ice, in water, and fermented drinks, for a series of years, I should say, that if cold water could ever do harm, as a beverage, under the circumstances just mentioned, it must be from its quantity, and not its coldness; even this accident, however, I have never heard of, nor experienced, though it may happen.

Another misconception, connected with the influence of temperature on health, is constantly operating, and producing deplorable effects. To persons about to leave a warm apartment, particularly females, the direction is, to cool themselves before they inhale the outer air, in order to avoid the ill consequences of a too sudden change of temperature.

This direction is the reverse of what ought to be inculcated, and is well suited to produce the evil, it is intended to prevent.

In what manner are persons usually made sick, by returning from the ball-room, or a warm parlour, in a winter evening? Undoubtedly by being exposed to a degree of cold, of sufficient intensity and duration, to induce disease. This is to be avoided by carefully cultivating a good share of heat till we set out, and by supporting it, while in the air by warm clothing, active exercise, or both. No one in health was ever injured by passing through the cold night air, so far as temperature merely is concerned, who came into it while warm, and with the means of preserving this warmth to his own house.

When about to be exposed to the certain loss of more or less heat, we should cherish and preserve this essential property of health, that we may be in a condition to part with some and yet retain enough of it to secure us against the approach of disease.

A CONCISE VIEW OF THE RESULTS OF DR. DAVY'S LATE ELECTRO-CHEMICAL RESEARCHES.

(Concluded from page 228.)

In the Philosoph. Trans. for 1811, we are presented with farther observations "on some of the combinations of oximuriatic gas and oxygen, and on the chemical relations of these principles to inflammable bodies." My objects, says he, in the present lecture, are to detail a number of experiments which I have made for the purpose of illustrating more fully the nature, properties, and combinations of this substance, and its attraction for inflammable bodies, as compared with those of oxygen; and likewise to present some general views and conclusions concerning the chemical powers of different species of matter, and the proportions in which they enter into union.

I. *On the combinations of oximuriatic gas and oxygen with the metals of the fixed alkalis.*

The strong attraction between oximuriatic gas and potassium is shewn by the spontaneous inflammation and the vividness of combustion of the latter when they come into contact. No water is separated in this operation. The proportions of the compound are such that one grain of potassium absorbs about 1.1 cubical inch of oximuriatic gas, and a neutral compound is formed, which undergoes no change by fusion.

"If oximuriatic gas be used not freed from vapour, or if the potassium have been previously exposed to the air, a little moisture always separates during the process of combustion. When pure potassium and pure oximuriatic gas are used, the result, as I have stated, is a mere binary compound, the same as muriate of potash that has undergone ignition."

Dr. Davy having found that the combustion of potassium and sodium in oxygen is much less vivid than in oximuriatic gas, was inclined to believe that the attractions of these metals for the former is feebler than for the latter, and he made several experiments which demonstrated the truth of his conjecture. Previous, however, to entering on this subject, he investigates more fully than has yet been attempted, the nature of the combinations of potassium and sodium with oxygen, and of potash and soda with water.

"In all cases in which I burnt potassium on sodium in common air, applying only a gentle heat, I found that the first products were extremely fusible, and of a reddish brown colour, which copiously effervesced in water, and which became dry alkali on being strongly heated on platina in the air, phenomena, which, at an early period of the inquiry, induced me to believe that they were protoxides of potassium and sodium."

"Since that time these oxides have engaged the attention of M. M. Gay Lussac and Thenard; and these able chemists have discovered that they are peroxides; the one containing, according to them, three times as much oxygen as potash, and the other 1.5 times as much as soda."

When these peroxides are formed on metallic substances, the latter are always oxidated.

" When formed upon muriate of potash, the colour of that from potassium was of a bright orange; that from sodium of a darker orange tint. They give off oxygen, as M. M. Gay Lussac and Thenard state, by the action of water on acids. They were converted into alkali, as the French chemists have stated, by being heated with any metallic or inflammable matter; they thicken fixed oils, forming a compound that did not redden paper tinged with turmeric, without the addition of water."

Several experiments are detailed in which attempts were made to obtain the protoxides of potassium and sodium, but the results were not perfectly satisfactory.

" As the pure alkalis were unknown till the discovery of potassuim, and soduim; and as their properties have never been described, it will perhaps be proper in this place to notice them briefly."

" When these metals are burnt in oxygen gas upon platina, and heated to redness, to decompose the peroxide of potassium, the alkalis are of a grayish green colour. They are harder than common potash or soda and of greater specific gravity. They require a strong red heat for their perfect fluidity, and evaporate slowly by a still further augmentation of temperature. When small quantities of water are added to them, they heat violently, become white, and are converted into hydrats, and these are easily fusible and volatile."

Dr. Davy then endeavoured to collect the water which is supposed to be evolved from the fixed alkalis by heat, and from his experiments he infers that potash may contain from 0.17 to 0.19 parts, and soda 0.23 parts in 100.

" It is evident," says he, " from this chain of facts, that common potash and soda are hydrats, and the bodies formed by the combustion of the alkaline metals are pure metallic oxides (as far as our knowledge extends) free from water."

The author then returns to the consideration of the relative attractions of oximuriatic gas and oxygen for the metals of the fixed alkalis. A grain of potassium was burnt in oxygen gsa,

the product was heated to redness, to convert it into potash half a cubical inch of oxygen was absorbed ; the retort was exhausted and very pure oximuriatic gas admitted. The colour of the potash instantly became white ; and by a gentle heat the whole was converted into muriate of potash ; a cubical inch and $\frac{1}{8}$ of oximuriatic gas was absorbed and exactly half a cubical inch of oxygen generated.

"I made several experiments of the same kind, but this is the only one on which I can place entire dependence."

On introducing oximuriatic gas into a vessel containing hydrat of potash which was prefectly opake, it instantly became transparent from the evolution of water; and on heating the glass in contact with the substance its opacity was restored and water was driven off.

No water was found in cases in which dry potash or mixtures of potash and the peroxide were heated in oximuriatic gas, unless the gas contained aqueous vapour; and the oxygen evolved in the process, when the heat was strongly raised, exactly corresponded with that absorbed by the potassium.

"When muriatic acid gas was introduced to potash formed by the combustion of potassium, water and oximuriate (i. e. muriate of potash) of potassium were instantly formed."

Muriatic acid gas introduced to hydrat of potash, and gently heated, separated water in great abundance, and formed muriate of potash.

The action of sodium and soda with oximuriatic gas is analogous to that of potassium and potash; but sodium absorbed twice as much of the gas.

"When common salt, that has been ignited, is heated with potassium, there is an immediate decomposition, and by giving the mixture a red heat, pure sodium is obtained; and this process affords an easy mode, and the one I have always lately advocated for producing this metal."

"Two parts of potassium will produce rather more than one part of sodium."

From data, assumed in this and the preceding lecture, Dr. Davy infers that soda is composed of 25.4 of oxygen to 74.6 of metal; and this would give the number representing the pro-

portion in which sodium combines with bodies 22 ; muriate of soda ought on this idea to contain one proportion of soda .22 and one of oximuriatic gas 32.9. Hydrat of potash he infers contains 15.1 of water and 84.9 of potash; hydrat of soda 22.4 of water and 77.6 of soda.

In the preceding lecture Dr. Davy stated the probability that the oxygen in the hyper oximuriate of potash, was in triple combination with the metal and oximuriatic gas ; the new facts respecting the peroxide confirm this idea. " Potassium, perfectly saturated with oxygen, must contain six proportions, for hyper oximuriate of potash, according to the experiments of Mr. Chenevix and Mr. E. Davy, must consist of 40.5 of potassium, 32.9 of oximuriatic gas, an 45 of oxygen."

" It seems evident, that in the formation of this salt, one quantity of potash is decomposed by the attraction of oximuriatic gas to form muriate of potash ; but the oxygen, instead of being set free in the nascent state, enters into combination with another portion of potash to form a peroxide, and with oximuriatic gas."

II. *On the combinations of the metals of the earths with oxygen and oximuriatic gas.*

The muriates of Baryta, lime and Strontia are not decomposable by any simple attractions ; when water is added they afford muriatic acid and their peculiar earths. Hence they are considered by Dr. Davy as combinations of barium, calcium, and strontium, with oximuriatic gas.

When these earths are heated with oximuriatic gas, a body precisely similar to a dry muriate is formed, and oxygen is evolved; the quantity of the latter driven off amounting to one part, when two of oximuriatic gas are absorbed.

" Dry quicklime *(oxide of calcium)* was heated in contact with oximuriatic gas, water was instantly formed in great abundance, and it can hardly be doubted that this arose from the hydrogen of the acid combining with the oxygen of the lime.

Oximuriatic gas does not expel oxygen from magnesia, alumine, or silex.

Barytes is capable of absorbing oxygen, and Dr. Davy thinks that peroxides of the earths must exist.

The oximuriate of lime gives off oxygen by heat, and forms muriate of lime.

III. *On the combinations of the common metals with oxygen and oximuriatic gas.*

In his experiments on the mutual action of these metals and oximuriatic gas, this distinguished chemist made use of small retorts of green glass containing from three to six cubical inches furnished with stop-cocks. The metallic substances were introduced, the retort exhausted and filled with the gas to be acted upon, heat was applied by means of a spirit-lamp, and after cooling, the results were examined, and the residual gas analyzed.

"All the metals I examined, except silver, lead, nickel, cobalt, and gold, when heated, burnt in oximuriatic gas, and the volatile metals with flame. Arsenic, antimony, tellurium, and zinc, with a white flame; mercury with a red flame. Tin became ignited to whiteness, and iron and copper to redness; tungstein and manganese to dull redness; platina was scarcely acted upon at the heat of fusion of the glass."

PRODUCTS.

Arsenic produced butter of arsenic; a dense, limpid, highly volatile fluid; no conductor of electricity, high spec. grav. which, when decomposed by water, gave oxide of arsenic and muriatic acid.

Antimony, butter of antimony, an easily fusible volatile solid, colour of horn silver, great density, producing a white oxide with water.

Tellurium: the product resembled that of antimony, affording a white oxide, by its decomposition by water. Mercury: Corrosive sublimate. Zinc: similar in colour to that of zinc, but less volatile.

Iron. A bright brown, lustre nearly metallic and iridescent, like Elba iron ore; volatile at a moderate heat, filling the vessel with beautiful minute crystals of extraordinary splendor, collecting in brilliant plates, the form of which could not be determined. When decomposed by water, it gave muriate of iron.

Copper. A bright red brown substance, fusible at a heat below redness, becoming crystalline and semi-transparent on cooling, and giving a green fluid and green precipitate with water.

Manganese. A substance of a deep brown colour, not volatile at a dull red heat: by the action of water assumed a brighter brown; a muriate of manganese, which did not redden litmus, remained in solution; and an insoluble matter remained of a chocolate colour.

Tungsten. A deep orange sublimate, which afforded by the action of water muriatic acid and yellow oxide of tungsten.

Tin. Libavius's liquor; with water it afforded a muriate, the tin being at its maximum of oxidation.

Silver and lead produced horn silver and horn lead; and bismuth, butter of bismuth. The absorption of oximuriatic gas was in the following proportion for two grains of each of the metals; viz. for arsenic 3.6 cubical inches; for antimony 3.1; for tellurium 2.4; for mercury 1.05; for zinc 3.2; for iron 5.8; tin 4; bismuth 1.5; copper 3.4; lead 0.9; for silver 0.9.

In cases where oxygen was given off, it was found exactly the same in quantity as that which had been absorbed by the metal.

The only instance in which Dr. Davy attempted to decompose a common metallic oxide by muriatic acid, was in that of the fawn-coloured oxide of tin, and the results were water and Libavius's liquor.

" In considering the volumes of oximuriatic gas absorbed by the different metals, in their relations to the quantity of oxygen which would be required to convert them into oxides, it would appear that either one, two, or three proportions of oximuriatic gas combine with one of metal."

IV. *General conclusions and observations.*

"Oximuriatic gas combines with inflammable bodies to form simple binary compounds; and in these cases, when it acts upon oxides, it either produces the expulsion of their oxygen, or causes it to enter into new combinations."

"If it be said that the oxygen arises from the decomposition of the gas and not from the oxides, it may be asked, why it is always the quantity contained in the oxide; and why, in some cases, as in those of the peroxides of potassium and sodium, it bears no relation to the quantity of gas."

Dr. Davy denies that there exists any acid matter in oximuriatic gas.

"Like oxygen it must be combined in large quantity with peculiar inflammable matter to form acid matter. In its union with hydrogen, it instantly reddens the driest litmus paper, though a gazeous body; contrary to acids, it expels oxygen from protoxides and combines with peroxides."

The formation of the oximuriatic gas by the action of muriatic acid on the peroxide or black oxide of manganese is explained on the supposition that the hydrogen of the muriatic acid combines with the oxygen from the peroxide to form water, while the oximuriatic gas is disengaged. This explanation is founded on an experiment in which "by heating muriatic acid gas in contact with dry peroxide of manganese, water was rapidly formed, oximuriatic gas produced, and the peroxide rendered brown."

From some experiments Dr. Davy concludes, that "the pure gas is incapable of altering vegetable colours; and that its operation in bleaching depends entirely upon its property of decomposing water and liberating its oxygen."

Oximuriatic gas is not, as stated in chemical works, capable of being condensed and crystallized by cold, for the pure gas, when dried, undergoes no change whatever at a temperature of 40° below 0. "The mistake seems to have arisen from the exposure of the gas to cold in bottles containing moisture."

Boracium, phosphorus, iron and arsenic attract oxygen more strongly than oximuriatic gas; potassium, sodium, calcium,

strontium, barium, zinc, mercury, tin, lead, and probably silver, antimony and gold, attract the latter with greater energy than the former.

Having thus concluded the subject of the combinations of oximuriatic gas, this important and interesting paper is terminated with a few reflections on the nomenclature of the oximuriatic compounds.

"To call a body," he observes "which is not known to contain oxygen and which cannot contain muriatic acid, oximuriatic acid, is contrary to the principles of that nomenclature in which it is adopted; and an alteration of it seems necessary to assist the progress of discussion, and to diffuse just ideas on the subject."

Viewing the subject in this light, and thinking a new name necessary, Dr. Davy has suggested the propriety of applying to it the term *Chlorine* or *Chloric* gas, from χλωρὸς, *green*, founded on one of its obvious and characteristic properties—its colour.

The compounds of oximuriatic gas and inflammable matter, he proposes to designate by the name of their bases, with the termination of *ane*. Thus argentane may signify horn silver, antimonane, butter of antimony, stannane, Libavius's liquor, &c. There seems to be no reason, he thinks, for changing the name of muriatic acid.

The last publication of Dr. Davy which has reached us,* is occupied in describing the properties and relations of a very singular combination of oximuriatic gas and oxygen gas, the principal characteristics of which we shall briefly state.

He observes that oximuriatic gas differs in properties when obtained by different modes. When obtained in the usual way from manganese, over water or quicksilver, its colour is a pale yellowish green: water takes up twice its volume, and scarcely gains any colour; the metals burn in it readily; it combines with hydrogen without any deposition of moisture; it does not act on nitrous gas, muriatic acid, carbonic acid, nor sulphureous gases, when they have been carefully dried. The gas procured

* Phil. Trans. for 1811. p. 155.

from the salts called hyper oximuriates by muriatic acid, differs much from this in properties: when collected over mercury, and procured from a weak acid with a great excess of salt, by a low heat, its colour is a dense tint of brilliant yellow green. It sometimes explodes during its transfer from one vessel to another, and even by the heat of the hand. It is a compound of oximuriatic gas and oxygen, mixed with some oximuriatic gas, which is proved by the results of its explosion; for it gives off from $\frac{1}{6}$ to $\frac{2}{5}$ its volume of oxygen, loses its vivid colour and becomes common oximuriatic gas. This gas in its pure state, is so easily decomposable that it is dangerous to operate on considerable quantities. It is inferred by Dr. D. to be composed of 2 parts in volume of oximuriatic gas, and 1 of oxygen; and the oxygen in the gas, is condensed to half its volume. Its smell resembles the odour of burnt sugar, mixed with the peculiar smell of oximuriatic gas. When exploded with hydrogen, there was a great absorption and muriatic acid was formed.

Sulphur introduced into it, soon caused an explosion, and the odour of oximuriate of sulphur, was perceptible. Phosphorus produced a brilliant explosion, by contact with it, even in the cold, and produced phosphoric acid, and solid oximuriate of phosphorus. Charcoal previously ignited, produced a brilliant flash of light, and burnt with a dull red light.

Copper, antimony, arsenic, and iron, did not burn in it, but when heated an explosion took place, and they consumed with a brilliant light.

It produces dense red fumes, with nitrous gas, and a diminution of volume. Mixed with muriatic acid, there was a gradual diminution of bulk, which became more rapid by the application of heat; oximuriatic gas and water were formed.

This substance produces phenomena, which were attributed by Mr. Chenevix, to hyperoxigenised muriatic acid, and, " they prove the truth of his ideas, respecting the possible existence of a compound of oximuriatic gas and oxygen in a separate state."

" The explosions produced, in the attempts to procure the products of hyperoximuriate of potash, by the acids, are evident-

ly, owing to the decomposition of this new and extraordinary substance."

Dr. D. proceeds to observe, that all the conclusions, which he has made, respecting the undecompounded nature of oximuriatic gas, are, he conceives, entirely confirmed by these new facts.

"Supposing oxygen, and oximuriatic gas, to belong to the same class of bodies; the attraction between them, might be conceived very weak, as it is found to be, and they are easily separated from each other, and made repulsive by a very low degree of heat."

"The most vivid effects of combustion known, are those produced, by the condensation of oxygen, or oximuriatic gas; but in this instance, a violent explosion with heat and light, is produced by their separation and expansion, a perfectly novel circumstance, in chemical philosophy."

This compound of oxygen, and oximuriatic gas, appears to possess slightly acid properties.

From some of the phenomena, exhibited by these two bodies, they are thought by Dr. Davy, to be distinct, though analogous species of matter; and he observes, it is certainly possible to defend the hypothesis, that oximuriatic gas, consists of oxygen united to an unknown base; but that it would be possible, likewise, to defend the speculation, that it contains hydrogen. Like oxygen it has not yet been decompounded.

For this newly discovered compound, Dr. Davy proposes the term *Euchlorine*, or *Euchloric* gas, from ευ and χλωρὸς.

We have now concluded the account of the experiments, and discoveries of the distinguished Professor of Chemistry, at the Royal Institution, in London; at least, so far as they have been made known to us, through the various Philosophical Journals, which have reached this country, and have thus, we hope, redeemed the pledge, offered to our readers, at the commencement of the volume. To those who are acquainted with the importance of the facts we have detailed, and the influence which they must exert on the science of chemistry, we trust this view, though necessarily protracted to a considerable length,

will seem neither useless nor uninteresting. Should it be approved, we propose, as more novel matter may be accumulated, to renew our labours on this subject.

It is necessary to observe, however, that an unlimited assent, has not been given by chemists, to all the propositions stated by Dr. Davy. Beside the opposition, which, at an early period of his investigations, was made to his theory of the decomposition of the alkalis, by some of the French chemists, particularly by M. M. Gay Lussac, and Thenard, who considered potassium and sodium, as compounds of those alkalis with hydrogen; but which was ultimately given up, in favour of the opinion of the English chemist; the conclusions of Dr. Davy, on the nature of oximuriatic gas, have been controverted, by Mr. Murray of Edinburgh, in a series of ingenious papers, published in the Philosophical Journal, which have drawn forth replies, from Mr. John Davy, in support of the opinions advanced by his brother. The question is not yet decided; and undoubtedly, on a subject so interesting, and one, which if admitted, must so materially affect the science of chemistry, the experiments and conclusions, even of Dr. Davy, ought to be received with circumspection, and adopted with caution, till they have been demonstrated correct, by multiplied experience.

As the history of the effects of a great mind to rise above the obscurity of birth, and the ills of fortune, conveys a useful lesson, and we are gratified, in tracing the means, by which men of genius have been gradually elevated to the sphere, they were formed to adorn and illuminate, we shall offer no apology for terminating this subject, with the following extract from Stock's life of Dr. Beddoes.

" In one of the most remote parts of Cornwall, a young man, only nineteen years of age, " with little access to philosophical books, and none at all to philosophical men," during the course of an education, designed only to qualify him, to act as a country practitioner of medicine, detected some inconsequent reasonings on caloric, which deformed the French theory of chemistry; struck out new views, both upon that subject, and upon light, and supported them, by a variety of novel experiments, ingeniously conceived and diversified. His fondness for chemical

pursuits, and a reputation for superior talent, gradually excited attention in the neighbourhood, and at length, reached the ears of Mr. Giddy, who sought the acquaintance of the young philosopher. Equally delighted with the genius and modesty of his new acquaintance, Mr. Giddy, in his correspondence with Dr. Beddoes, spoke of the treasure he had discovered, and, at his instigation, Mr. Davy also addressed a letter to the Doctor, offering to transmit a copy of his observations and experiments, for his perusal. It was in the month of April, that this offer was made him, and in a letter to Mr. Reynolds he thus alludes to it. "It is strange that so many people should turn against caloric as a substance, at once. I have long been dissatisfied with the common doctrine. In my lectures I preferred the hypothesis of motion, and indeed, the miserable abuse of the theory of latent heat, by Lavoisier, seems to me, to render its non-existence, as clear as any proposition, indirectly demonstrated by Euclid. You will see Count Rumford's experiments, in the volume of the Philosophical Transactions just published; and a new correspondent, who, by the way, does not know of these experiments, and who seems a clever man, offers me a perusal of some new ones on friction and percussion, which he says prove heat to be but motion." From the tone of this letter, it would not appear, that Dr. Beddoes, had formed any very high anticipations of the merits of what was thus offered for his perusal. The sight of the papers and experiments, however, affected him with an agreeable surprise.—He forwarded to Mr. Davy, Count Rumford's experiments, together with a prospectus of a publication, which he was then meditating; designed to collect miscellaneous information on physical and medical subjects, from the west of England; and at the same time, solicited his permission, to enrich his volume, with his valuable essay. He also wrote to Mr. Giddy, to know whether it would be possible, to secure his young friend's services for the Pneumatic Institution; and a negotiation on the subject commenced shortly afterwards, which terminated in Mr. Davy's removal to Bristol, in the month of September.* He had here access to a labora-

* In the year 1798.

tory, far more suitable to the extent of his views and inquiries than the confined one at Penzance. His genius and his industry, seemed to develop themselves with his opportunities, and he shortly afterwards, made those brilliant discoveries, which reflected splendor on the history of the Institution; and, by attracting the attention of all scientific men, to their ingenious author, gradually led the way to that elevated rank, which he now occupies among his philosophical countrymen."

REMARKS

ON DISEASES RESEMBLING SYPHILIS;

WITH OBSERVATIONS ON THE ACTION OF THOSE CAUSES WHICH PRODUCE THEM.

BY WALTER CHANNING, M. D.

(Concluded from page 250.)

THE result of these observations, which throw new light on the peculiar characters of Pseudo-Syphilitic ulcers on the penis, is, that in constitutional diseases, which are sometimes produced by them, we should prescribe to ourselves a prudent delay, which will enable us, from their progress, to determine their nature and remedies. " In recommending delay, (says Mr. A. p. 50.) it cannot, I suppose, be thought that I would advise any one to wait till an ulcer destroyed the *velum pendulum palati*, or did material injury to an important part. There are cases where the progress of the disease, obliges the surgeon to use mercury, even though he may be suspicious that it is not syphilitic." And then states the various effects mercury is found to produce;

sometimes curing them, sometimes rendering them stationary, and at others aggravating them. (Mr. A. p. 59) thinks it impossible to depict by words the various sores produced by sexual intercourse. " It is from their effects on the constitution alone, that we can judge whether they were syphilitic or not. Many we know are not so, since they do not produce the constitutional effects of syphilis. The subject can alone be decided by future experience, derived from watchful observation made by experienced men." (p. 61) Mr. A. observes "but in all cases of ulcers arising from impure intercourse, Surgeons are not to confide in their powers of discrimination, but to give sufficient mercury, slightly to affect the constitution, in order to guard against the consequences of absorption, and by local, and other general means, to cure as quickly as possible the local disease, and thus remove the source of contamination, and the necessity for the continuation of medicine." Mr. A. recommends delay in constitutional diseases, in doubtful cases. Some observations on this subject will be made, when more particularly engaged on constitutional diseases resembling syphilis. (p. 67) Mr. A. observes "but I will take upon me, to describe some species of sores, which frequently occur, and are treated as syphilic, but which I am convinced are not so. The sores, in one species alluded to, generally break out in succession, and sometimes after considerable intervals of time; which circumstance, if remarked, would render it improbable, that they arose from infection of the ulcerated part, since such sores would probably be contemporary. The ulcer is at first inflamed, and spreads ordinarily to the size of the finger nail: its circumference is thickened; it throws out new flesh, which rises above the surrounding skin; sometimes there is an appearance of several little cells or spaces in the interstices of the granulations, if they may be called so, owing to the whole ulcer, not producing new flesh in an equal degree. The edges of the sore generally retain their diseased state, after the middle has become healthy; from this cause, the healing of the sore is retarded. These sores are slow in healing, under any mode of treatment, and they generally get well in the same succession, as they broke out. They

sometimes form in a circle round the orifice of the prepuce, and cause a contraction in that part, after they have healed." "The sores which I am endeavouring to describe, seem to be the consequence of an irritated state of the prepuce, from which there is sometimes a slight general discharge, like that which takes place, when the gonorrhœa shifts its situation, from the mouth of the urethra, and becomes the gonorrhœa of the prepuce."

In the earlier part of Mr. A's practice, he was in the habit of using mercury in these cases, but frequent observation emboldened him to abstain from the use of it, and he says, (p. 70) "I have never found, though I have met with a considerable number of instances, that I have in this respect acted wrong."

Another species of sores differing however much in their progress from venereal, but which may be confounded with it, are thus described by Mr. A. (p. 73.) "The first appearances of these sores are various, but in their progress a thickening in the surrounding parts takes place, whilst the centre is soft, and less diseased than the circumference. I have seen the surrounding parts much elevated, and an opening leading into a cavity in the middle. I have seen them, on the contrary, heal with a flat surface, and acquire a circular hardness, the middle being quite soft, and the area of the circle gradually increase. I have known sores heal apparently smoothly, and afterwards the edge has acquired a circular hardness, like a ring, of some firm substance." Mercury in these cases given in small doses, so as not to produce tenderness of the gums, has not retarded their healing, while in others no mercury has been given, and the sores have readily healed. Sores of the herpetic kind, according to Mr. A. sometimes occur on the sides of the penis, after sexual intercourse; and others similar to those which occur in tinea, which careless surgeons might consider venereal, and treat them accordingly, but which do not require such treatment.

In the first species of sores now mentioned, Mr. A. found that slightly touching them with argentum nitratum, every second day, and dressing with the solution of zincum vitriolatum, were the local means, which seemed to be the most successful. The

others having the same characters, and being of the same nature with which they appear on other parts of the body, are to be treated with their usual remedies. We are furnished by Mr. Abernethy with a number of very interesting cases, in which the *progress* of the diseases resembling syphilis, is detailed with great precision. We however, have been principally engaged on those primary sores, which are so very apt to mislead the practitioner; in these I have recommended a slight course of mercury, observing with the greatest attention the progress of the disease under the same. I have made such quotations from the best authors on the subject, as I hope, will throw some light on these diseases, or be the means of exciting a spirit of such observation, as will be productive of much useful knowledge concerning them. There are however circumstances connected with their occurrence, which should excite the utmost caution in the practitioner in giving his opinion, or recommending remedies, and certain symptoms which, in many cases, will always enable him to decide, concerning their real nature; and the progress of them, under various treatment, will not only strongly indicate this to him, but as strongly impress him with doubts of the propriety of the treatment, should symptoms be aggravated under it, or incline him to continue it, if the contrary happened.—I leave it to the reader to draw the comparison between the real and fictitious disease, and close this communication with the following aphorisms from Dr. J. Adams, who in his work on morbid poisons, has treated at length on this subject, and to which I beg leave to refer the reader for a criticism on Mr. Abernethy's work just now quoted.

"Whenever" says Dr. Adam's, "we see a sore on these parts, (viz. of generation) without pain, and scarcely distinguishable from mere excoriations, we should content ourselves with the most simple applications, and without any internal remedies."

"If the sore heals firmly for some days, or if it continues stationary, or spreads only superficially without pain, we may be satisfied it is not venereal, or has not yet acquired a venereal character."

If attended with pain, we may suspect a morbid poison of some kind.

If the inflammation is considerable, and the disposition to ulcerate rapid, or slough should have commenced, we shall probably have fever at the same time. In all these cases we must attend only to the general and local symptoms, as in ordinary cases, by allaying the inflammation and fever.

If the fever and ulceration both continue, our prognosis must be unfavourable; but the longer we delay the use of mercury, the greater will be the probability of success from it.

If the disease is not soon relieved by mercury, we have reason to fear it will be exasperated by it; and if we find this the case, we must refer to those remedies which have been before suggested.

If slough should have commenced, and its extent appear to be considerable, the probability is, that as soon as it is cast off, the part will skin over without granulation.

If granulations follow the rapid separation of a slough, we consider the case as common mortification.

But it may have arisen from inflammation, excited by the presence of a morbid poison; we must, therefore, carefully examine whether any ulcer remains where the slough has not taken place, and watch its progress, so as to ascertain its character.

If the slough is superficial, and the part from which it is separated looks particularly clean, that is, retains the crude surface of separation, neither skining nor granulating, we may expect a succession of sloughs along the surface; and in the early stage of such a disease we shall gain nothing by mercury in any form.

If, as the inflammation subsides, or after the slough is separated, we find, instead of healing, a hard and somewhat painful ulcer, without any restoration of parts, we may be certain of a chancre. In these cases the sloughs will generally be small, almost circular, and about the size of a beginning chancre.

If the ulceration should be slow, and without the character of chancre, the fever somewhat abating, we have every reason to believe the disease will cease spontaneously, or that as soon as

the constitution is become familiar with it, that it will yield to mercury.

This, in addition to what has been said of the soft wart and the thick lipped ulcer, will, I trust, be sufficient for every practical direction in the treatment of primary anomalous symptoms.

But whilst there is this certainty in distinguishing primary, it must be admitted that secondary symptoms are by no means so readily ascertained. It is but justice to add, that these were the only cases in which Mr. Abernethy was undecided; and we cannot be too grateful for the number of instances he has produced, and the descriptions he has given, imperfect as some of them may be."

To these we may add the following observations made by Dr. Adams in that part of his addition of Hunter's work on the venereal disease, viz. on that part of the work which relates to the diseases resembling Syphilis. "If this character," speaking of the peculiar character of chancre, "should not appear, we are to consider first, that a mercureal course is by no means a matter of indifference; next, that there are diseases in those as well as other parts, which are exasperated by mercury; and, lastly, that there are morbid poisons which must run a certain course before they can be cured; that if that course is not rapid, it may be suspended by mercury, but that this suspension is worse than useless; the constitution is reduced, and the character of the disease so changed, that we can no longer ascertain what would have been its appearance had no mercury been used."

ON CROUP,

BY J. JACKSON M. D.

In some fatal cases of croup which I have seen, the appearances on examination of the dead body, did not accord with those commonly noticed. It may be useful to record the facts, although we should not be in haste to form inferences from them.

In the cases to which I refer the mucous membrane of the larynx has been found inflamed, but without any false membrane, or lining of coagulable lymph. In the first of these cases the peculiar sound of croup was exceedingly evident, so that when entering the room where the child was, before shutting the door, I was satisfied of the nature of the complaint. A few hours before death I performed the operation of bronchotomy without affording any relief. It was the first fatal case of croup which had ever occurred to me, and I was extremely anxious to examine the larynx. With difficulty I obtained permission to do this, on condition that I would not extend the dissection beyond the neck. Dr. J. C. Warren accompanied me in the examination. We found the mucous membrane of the larynx much inflamed, and smeared over with a quantity of loose mucus, but without any false membrane. The inflammation extended into the trachea as far as we could examine. This case occurred nearly ten years ago and is given from memory, but of the accuracy of the important facts I am perfectly satisfied.

The second case happened about three years afterwards, and resembled that above described. The appearances in the larynx were the same. The lungs were more full of blood than usual.

The third case occurred in the winter 1810—11. The patient was a strong healthy boy, about five years old. I was called at 1 o'clock, P. M. when he had been sick twenty four hours. At that hour Dr. Bigelow visited him, and I saw him at 3 o'clock. He died at 4 o'clock. He had all the symptoms of croup exceedingly well marked, and I was particularly solici-

tous to examine the body, as I was then giving clinical lectures, and wished to exhibit the parts to my class. I removed the larynx and carryed it immediately to my lecture-room, where I demonstrated to the students precisely the appearances I have described in the first case. There was not any coagulable lymph, the mucous membrane was highly inflamed and swollen, and the rima glottidis was thus very much narrowed. The membrane was smeared over with a thick mucus.

The fourth case is of very recent date. I was called to this on Sunday, the 5th of July, 1812, at 3 o'clock, P. M. The disease had commenced twenty hours before, and was very strongly marked. The symptoms were considerably mitigated after vomiting. I tried in vain to take blood; the child was very fat, and the veins were all hidden, even the external jugular. The respiration grew bad again before morning, but the patient lived till the next morning, the 7th, so that the disease continued two days and a half, or sixty hours. In eight hours after death, Dr. Bigelow examined the body, and the following is his report of the appearances. "The trachea with the larynx was removed. The whole tube was pervious as usual excepting the presence of a large quantity of mucus of the ordinary consistence. On dividing the larynx and trachea at the posterior side, and exposing the internal surface, the mucus being removed, a number of distinct red spots were discovered, of considerable size, on the lining membrane. One of these was immediately below the glottis. Between the mucus and the lining membrane there was no factitious substance whatever, nor any appearance the least resembling the membranes which I have seen formed in some other cases of croup. The lungs were not examined."

In the other cases I had thought it possible that the disease had not continued long enough to allow the effusion to take place, as the patients all died in less than forty-eight hours from the attack. But in this last case such a supposition cannot be admitted; for I have in my possession a preparation in which the false membrane is exhibited in great perfection, and this came from a patient of Dr. Channing's which I had seen with him, and in which death occurred in about thirty hours after the seizure.

Boston, July, 1812.

REVIEW.

ARTICLE. IX.

Observations on Hydrophobia, produced by the bite of a mad dog or other rabid animal, with an examination of the various theories and methods of cure existing at the present day, or an inquiry into the merit of specific remedies. Also a method of treatment best adapted to the brute creation. In a series of letters addressed to a friend. By James Thacher, M. D. Soc. Am. Acad. Art. et Scienc. etc. etc. Published by Joseph Avery, Plymouth, Mass. 1812. pp. 301.

A Dissertation on the Bite of a Rabid Animal, being the substance of an essay which received a prize from the Royal College of Surgeons in London in the year 1811. *By James Gilman, F. L. S. member of the Royal College of Surgeons in London.* London; printed by Richard Taylor & Co. Shæ-Lane, for J. Callow, Medical Bookseller, Crown-Court, Princess-Street, Soho. 1812.

It is unnecessary for us here to search for the early history of Canine madness. The first authentic case which we find recorded, in which the characters of the disease are clearly stated, in the present state of our knowledge, is all that we require.

The subjects of hydrophobia have fallen victims under almost every treatment, and if the genuine disease has been ever cured, such cures are merely insulated facts, from which no general principles can be deduced, for perhaps the means of cure in all of them have been different, and the very next case that occurred has been fatal under apparently the same treatment, and with apparently the same symptoms.

But if the early history of this disease does not furnish us with principles, or plans of cure, we learn from it the effects of civi-

lization on the practice of medicine, and though the same fatality attends it, as always has done, it is not brought about now by the same means, for the ancients smothered its subjects in their beds, we must however lament that the inefficacy of medicine does for the subjects of the disease now what the barbarous compassion of friends effected in earlier times.

The characteristics of this disease in dogs are as follows. There may be observed a very marked deviation from accustomed habits. Mr. Gilman considers depraved appetite as most peculiarly to mark this complaint. It, however, makes a stage of the complaint, in which the rabid animal seldom bites any one unless provoked to it.

The greatest caution is however to be observed in this stage of the disease, when the animal fauns upon us we may be bitten, and when they seem to demand our care and regard from apparent indisposition, we may become subjects of a disease as fatal as horrible. "As the disease advances his eyes sometimes become inflamed, and a purulent discharge issues from the lids," *Gilman.* Instead of barking the animal is heard sometimes only to howl; he laps water freely, and frequently eats with a voracious appetite. If restrained, or closely confined, the dog, in the advanced stages of the disease, becomes still more furious; he gnaws every thing that comes in his way; discovers a most marked antipathy to cats; he endeavours to bite every animal he meets, if at large; and will still lap water, though at times he is observed not to be able to swallow it. Inflammation of the bowels, which frequently attends this stage of the disease, is indicated by the animal sitting in apparently great pain. In the last stage of the disease, the changes are only for the worse; the jaw falls as if paralytic, saliva flows from the mouth, he staggers about unable to bite, and generally dies on the fourth or fifth day from the commencement of the disease. Dissection of subjects, who have fallen victims to this disease, has, as it does in various others, discovered various diseased appearances in various viscera; and different authors have determined on one or other appearance to be pathognomonic as it suited any before settled theory. The stomach has however been inflamed, and Mr. Gilman almost thinks this a pathognomonic sign of the disease.

Such appear to be the symptoms of this disease in dogs. We conceive an attention to them will be of great practical importance. For experience has most unquestionably proved, that this disease may be communicated to the human species by the immediate application of the poison, producing the disease by bite or wound; and we have sufficient evidence to warrant the conclusion, that its application to the skin merely will also produce it. But at what stage of the disease in the rabid animal the disease may be communicated, we are ignorant; for at so early a period when the disease was not suspected to exist in the dog from any symptoms present, a bite has produced it. Knowing then the previous habits of the dog, any change should be immediately noticed, and caution imposed, and no man in his senses can be delighted with the snappish regards of a strange cur.

In the human subject this disease is attended with most distressing and fatal symptoms. The habits of the person are almost destroyed; he seems no longer the being with whom we have been acquainted. His mind is vigorous on most subjects, on many unusually strong. But he is suspicious of his best friends, and alarmed at the approach and attentions of strangers. His physician is frequently looked on as his executioner, and, by the most persuasive eloquence, he requests him to leave him, that terror at sight of his own species may not be superadded to his other horrible causes of misery. Very often a burning pain of various tensity is felt in the part bitten, and "oppression of the præ cordia is one of the constant symptoms of the disorder; it begins, increases, and ends with it." The secretions of the glands in and around the mouth is astonishingly increased, and the patient is found to be constantly spitting or frothing at the mouth. The approaches of this disease are at times slow, at others very rapid; sometimes slight febrile symptom, as shivers, slight headach, loss of appetite, are premonitory; at others, great depression of spirits, great restlessness, violent headach, and vertigo, warn us of its approach; and at other times sudden fright at the sight of water has been the first circumstance to excite alarm.

Dr. Thatcher does not think this last circumstance a pathognomonic sign of the disease, in the human subject. On this subject, page 57 of his work, he observes, "The patient expires in

spasm *after* losing the difficulty of swallowing liquids for many hours, *so that the dread of water is by no means a pathognomonic symptom.*" We are furnished by many diseases with analogies which would seem to oppose the correctness of the Doctor's remark. Patients suffering under penotoneal inflammation, for instance, or who have long been subjects of incurable mania, very frequently, previous to death, experience most perfect relief of all their symptoms; mortification having taken place in the one instance, and certain changes, we do not understand, in the other. Now from this circumstance alone, no one will deny, or doubt, that pain and disease of the mind are pathognomonic symptoms of these several diseases. But we think, that reference to almost every case on record of genuine canine madness establishes the fact, that dread of water is a pathognomonic symptom of the disease. Whether this disease has ever occurred spontaneously in the canine species, is a question very difficult to decide. The evidence against it is as respectable as that for it; but as there is this diversity of opinion, it is of importance to notice what have been considered its remote causes. Five remote causes are mentioned by most authors on the subject; 1st, great heat and cold; 2dly, putrid aliment; 3dly, deficiency of water; 4thly, want of perspiration; and 5thly, warm under the tongue. But a moment's recurrence to history would convince us, that at times, when these causes, any or all of them, have existed in the greatest degree, the disease, said to be their consequence, has not supervened. Dr. Mease has insisted much on putrid aliment as a most powerful remote cause. But countries might be mentioned in which this disease has never appeared, and in which this sort of aliment is the only food of dogs. But again, when these causes were not apparent the disease has appeared and raged with uncommon violence. Dr. Bardsley is strenuous against its spontaneous origin in the canine species, and has therefore proposed a quarantine on dogs, from the prosecution of which project he conceives the island of Great Britain might be entirely freed from the disease. We are then very naturally led to this question, what time has been known to elapse from the bite to the access of the disease? The action of the poison is doubtless influenced by circumstances with which we may be

considered unacquainted. Ten or twelve days however have been considered the average period from the bite to the access of the disease in the canine species, and the most common period in the human subject has been assumed to be from twenty to forty days. The latest period at which it occurs in the human subject has been, by Dr. Bardsley, placed at from twelve to twenty months, and in dogs at eight months. Hence the quarantine on dogs has been proposed to be extended to eight months, to exterminate the disease from Great Britain.

Other authors, however, have given much wider latitude to periods at which the disease may occur. "A well attested case" is given by Dr. Mease, in which it did not appear till three years and four months from the bite of the rabid animal, and Morgagni has given us another "well attested" case from Alzaharavius in which a period of forty years elapsed before it appeared. If credit is to be given to such histories, it would seem hardly possible, in any other way, to exterminate the disease than by destroying those species of animals in which it exists under such destructive tendencies; a plan as little likely to be adopted as any which has been proposed. The disease occurs spontaneously in the human species it has been said. A question very naturally arises; has this disease been communicated from the human subject, by bite, or in any other manner to the brute, or human species? From many experiments made on the brute subject, with the saliva of the human, the disease has never supervened. Dogs have been frequently inoculated with the saliva of persons, in various stages of the disease, but no bad consequences followed. As to the question, which is a most important one, has the disease been communicated from the human subject to its species; the answer is not quite so satisfactory: for some writers on the subject, at least, entertain doubts on the subject. A case apparently of this kind, is stated by Dr. Thatcher; we refer to the case of Dr. Childs.

Dr. C. was while attending a patient rabid from the bite of a cat, scratched by the nails of the patient; and the saliva had been very liberally applied at different times to the wound; the wound did not heal or suppurate, and in ten days from the wound he began to feel indisposed; he suffered high fever, and was reliev-

ed by constant vesication, and cured with large doses of the mild muriat of mercury 25 grs. in a dose. Dr. Thatcher does not think decidedly, that this was a genuine case of the disease; and if it were, that the action of the poison had been modified by the human constitution. But we collect from the case there was neither present any dread of water, nor that still more striking symptom of canine madness, viz. the astonishing secretion from the salivary glands.

That the wound however exhibited unusual appearances, and that high fever was present, we do not for an instant doubt; but as slight wounds in innumerable instances almost, have been attended with as violent, nay fatal, consequences, and where Hydrophobia was not for a moment suspected, is equally true. From the evidence afforded by this case, we should conclude that it was not a genuine case of the disease; and there is one circumstance, which has great weight with us, in giving this opinion, that in no case of canine madness which had made the advances this appears to have done, toward a fatal conclusion, has the fatal event ever been prevented. The records of medicine furnish numerous cases, in which the imagination has produced not only worse diseases than Dr. Childs suffered, but even death itself; and if we should refer some of the circumstances of the case to that most powerful mental faculty, we flatter ourselves that Dr. C. would sooner allow it very great influence, than strenuously oppose the weight of opinion and fact, which might be adduced in support of our opinion. But as this question is *sub judice*, all that prudence should be observed in attendance on the subjects of this disease, which is compatible with the performance of those offices to which we are so peculiarly called.

As to the *mode of action* of this poison, as on almost every subject connected with it, there is a great diversity of opinion, and in the two books before us, two very opposite opinions are held. Dr. Thatcher is opposed to an absorption of the poison as a cause of the disease, and contends for its effect on the nervous system; while Mr. Gilman believes in the doctrine of absorption. Dr. Mease, arguing from a forced analogy, is against absorption, and his work is quoted by the gentleman on each side of the water. His illustrations are of little weight with Mr. G. for his experi-

ence and that of many others before him, entirely opposes them. The question now under examination involves another, which may therefore be very properly considered with it; viz. what circumstances are necessary for the production of the disease? or, in plainer terms, is a wound made by the rabid animal, or accidentally existing in the hand, for instance, a direct application of the canine poison to it, absolutely necessary, or has its mere application to the sound skin ever been followed by the disease? These are practical questions, and deserve a moment's consideration.

It is an undoubted fact, that some application of the poison is necessary. The orders of parts which seem chiefly influenced by poisons, are the nervous, and lymphatic or absorbent ones. In many specific diseases, we have occular demonstration of the affection of the one, and from the immediate effects of some poisonous substances when applied to the nervous system, say the nervous coat of the stomach for instance, we have inductive demonstration for the other. Those cases however in which the nervous system seems primarily affected, are, for the most part, those which are the consequences of contagion, which are not evident to the senses, or of effluvia, which are equally out of the sphere of observation. There are however, animal and vegetable poisons, which produce instantaneous and fatal effects, and thus seem primarily to affect the nervous system. But I can refer to no one supposed to act as these do, which in its action resemble that now under consideration; no one which remains for months, and, according to some, years, in a part of the system, and without one suspecting its existence, suddenly exerting itself with most fatal potency. I might refer to a disease, the effect of a specific animal poison, which decidedly enters the system by the absorbents, which very nearly resembles this disease in this very circumstance, of remaining a long time without producing its specific effects; a disease familiar to every general practitioner. The arguments from analogy therefore, would seem to form the doctrine of absorption, and the slight knowledge we have of the laws of the nervous system, would not seem to oppose this opinion. As to the question, has the disease been produced without the concurrence of a bite? respectable evidence might be adduced in its favour; and the obvious practical impor-

tance of this knowledge, a possibility of its occurrence, is to induce the greatest prudence and caution, when exposed to the poison in attendance on the sick, or more especially in experimenting on dogs with the poison. The practical utility which may follow the belief in the doctrine of absorption, is this, that if the part which has been made the seat of the poison be entirely excised, the person or dog bitten will most probably escape the disease, and this, if it be done even some time from the accident, should the disease not actually be present, Mr. Gilman is decidedly in favor of excision, and that we may be certain that all the wounded part is removed, he recommends that Indian ink mixed with a little volatile alkali should be rubbed into the wound, as a guide by which we shall be able to determine if all the suspected portion is removed. He farther recommends that when the knife has touched any part of the wound or bite, it should no longer be used in the operation, but another one substituted for it, otherwise we may increase the hazard to the patient by increasing the surface to which the poison is applied. He seems to think that the interval which sometimes elapses from the bite to the access of the disease, is owing to the matter applied being originally in too small quantity, and that it acts locally, increasing in quantity, till there is sufficient to contaminate the whole system; and therefore insists strongly on excision, at any period previous to the actual access of rabid symptoms. As to the correctness of this opinion, and its agreement with the action of the poison, we have not time to inquire.

Mr. G. decidedly prefers immediate excision to any other treatment, and from the frequent occurrence of the disease after the most liberal use of caustics, he infers that they do not in all cases destroy the poison, but that the slough they produce contains, and communicates to the surrounding parts, the poison in all its virulence. The caustic, however, on which we would most depend, is the white arsenic, as the experiments made on dogs, with the saliva of a rabid animal, mixed with a strong solution of that mineral, have been more conclusive than any other for its destructive effects of the rabid virus. Long continued ablution of the part bitten with cold water, has been recommended on the highest authority; and a mean so simple and al-

ways at hand, should certainly be constantly applied, till some person capable of performing excision be called, when that operation, in our opinion, should always be immediately done, and when a part has been injured, where this cannot be done, the immediate application of caustics should be made.

On specific remedies, our limits will not allow us to make any remarks, for they do not deserve them. The imposition that has been practised on crowned heads, legislatures, and individuals, are too gross for a moment's attention. Dr. Thatcher has given them a place in his work, and as facts in medicine, they may with propriety go into history. The scutellaria lateriflora, or skull cap, is the most fashionable specific at present. It has, however, never succeeded in the hands of regular practitioners, even as a preventative, and we have lately heard of its failure in Dr. T's own hands. The practical dangers which may attend the use of specifics (so called) in this disease, for which there is none, is a very serious and alarming one; the patient and physician are seduced into practice, fatal perhaps in most, or many instances, as it has superseded the only means which afforded the smallest hope of success.

We have now brought our remarks on these works to a close. Their object was laudable, and their authors deserve credit. They will regret with us, that they have not taught us how to cure the disease to which their time has been devoted. Dr. T. deserves well of the friends of medical science, that he has collected so much on the subject; and well of the friends of humanity, for the intentions with which he composed his work. There is one circumstance in the work of Dr. T. on which we will express our *decided regret;* we refer to the typography. The errors are uncommonly numerous throughout the work, and as nothing can excuse it, we can accept no apology.

ARTICLE X.

Observations on Combustion, and Acidification; with a new theory of those processes, founded on the conjunction of the Phlogistic and Anti-Phlogistic Doctrines. By John Redman Coxe, M.D. Professor of Chemistry, in the University of Pennsylvania.

> We think our fathers fools, so wise we grow;
> Our wiser sons, no doubt, will find us so.

Philadelphia, published by the author. R. & W. Carr, 1811. pp. 50.

We rose from the perusal of this pamplet, with the impression, that all attempts at this period, to found a theory of combustion on one common principle of inflammability, are premature. The plan of Dr. Coxe, is obviously derived from the late discoveries and investigations of Sir Humphrey Davy; but in pursuing it, he has, we apprehend, advanced one step beyond the conclusions of this distinguished chemist, and involved himself in the obscurity of hypothesis, where he and his reader may look in vain for the light of fact and experiment, to guide their footsteps. We believe this attempt to combine the two theories of combustion to be ill judged, not only from the recent date and uncertain nature of the results of the researches above mentioned, but also from the express declaration of their author, who candidly acknowledges, that he has advanced views, (on the subject of hydrogen,) confessedly hypothetical, and which require farther investigations to be confirmed. The conclusions of those whose object is to modify a theory which has been universally received, and which in its leading principles, is founded on facts capable of rigid demonstration, should be viewed and adopted with caution. The change perhaps ought not to depend on one man only, however eminent; it should be the result of the combined observations, and multiplied experiments of many; and the theory thus modified, should be characterized by the facility with which its principles may be demonstrated, and the extensive generalisation, of which they are susceptible. A theory is a principle, or number of principles deduced from individual

facts, and is intended as a rule, by which their phenomena may be explained; an hypothesis implies an arbitrary assumption of principles, and expects a gratuitous concession of certain data, which cannot be directly proved by facts, but without which those facts cannot be generalised. It admits of reasoning from probability, in cases where we are not yet arrived to certainty. We have no hesitation in referring Dr. Coxe's "theory" to the latter; for in order to complete it, he finds himself under the necessity of stating as facts, what has never yet been demonstrated, namely, that hydrogen is a constituent part of every inflammable substance, and an essential ingredient of every acid. If these propositions be allowed there is, perhaps, but little difficulty in establishing his theory, and in recording a very friendly and intimate understanding between oxygen and hydrogen, in the processes of combustion, and acidification. But if they be denied, his views must obviously be considered as hypothetical, and his reasonings of consequence equally inconclusive.

Dr. Coxe commences his "observations" with some remarks on the theory of combustion, as stated by Lavoisier. The fundamental proposition in that theory, that in every case of combustion, oxygen combines with the burning body, he thinks is so firmly established, that no subsequent changes in the science will overturn it. But he adds, "even here some anomalies exist, which render it probable, that there are some exceptions to this celebrated basis, of the antiphlogistic doctrine." Two of these anomalies are quoted; the explosion of gun-powder, and the phenomena, accompanying the combination of sulphur and copper exposed to heat, instances, which appear to have been introduced for the purpose of showing the imperfect application of the principles of Lavoisier, and the necessity of having recourse to the agency of other causes, in order to give a full explanation of the process of combustion. With respect to the last of these, Dr. Coxe has assumed as true, what the analyses of various chemists have proved false, that actual inflammation takes place, during the formation of the sulphuret of copper; for it is well known, that the sulphur after this process is not oxygenized, nor is the metal reduced to the state of oxide, changes which must necessarily happen had they undergone the process of com-

bustion. The disengagement of heat and light, during their union, is no proof in favour of Dr. Coxe, since these, to use the language of Mr. Davy, are "merely the effects of intense agency of combination." With respect to the first example, no satisfactory solution of the phenomena has yet been offered; but to answer his purpose, or to render them worthy of being inserted in his "Observations," it was incumbent on Dr. Coxe to show, that the phenomena displayed in these experiments may be more readily explained on the principles of his hypothesis, than on the commonly received doctrines of Lavoisier, otherwise we are at a loss to imagine why they should have been introduced.

After adverting to the belief of Stahl, Priestley and Kirwan, in the existence of a common principle of inflammability, and to the recent discoveries of Sir H. Davy, which he considers as a renovation of the Phlogistic theory, Dr. C. observes,

"These discoveries appear to prove, that all those bodies hitherto classed amongst the simple combustibles, as sulphur, phosphorus, and carbon, do actually contain hydrogen as a common constituent; analysis has long rendered the presence of the same principle certain, in all the compound combustibles, in large amount. Hydrogen was the principle which Kirwan, Priestley, and others, contended for, as the common one of inflammability, and, by thus giving to phlogiston a "local habitation and a name," they removed at least, one of the objections founded on it. Now, when we find one peculiar principle uniformly enter into the composition of one certain class of bodies, it can scarcely be deemed visionary, to attribute to its presence, some common principle of that class. This common property then of that class is inflammability; that common principle is hydrogen." "Reason therefore would lead us to conclude, that as metals are combustible, although so various in themselves, its common property in them, must equally depend on the presence of one similar principle."

What proof, we may ask, has Dr. Coxe brought forward in support of this theory? Have the metals been decomposed and the presence of hydrogen in them demonstrated? Is not this opinion, though he considers it probable, regarded by Sir H. Davy as confessedly hypothetical? and has he attempted to reduce the few facts which his novel researches have brought to light, to any regular systematical arrangement? We cannot find that he has, and the arguments brought forward by the author to prove the existence of hydrogen in these bodies, certainly

have not had the effect to convince us of the justness of Sir H. Davy's hypothesis, that "hydrogen may be the common principle of metals and inflammables, being confined in each with certain bases, and that under this point of view it will stand in opposition to oxygen."

In the reduction of metals by hydrogen, Dr. Coxe *would rather imagine* that the process is effected by a double affinity, or that this principle is shared between the oxygen and the metal; and, in those cases in which oxides are decomposed by the joint operation of heat and charcoal, he *apprehends* that "the hydrogen is pursuing another course dependent on the laws of compound affinity, and whilst the oxygen of the oxide unites to the carbon of the charcoal, the metal is reduced by the combination of the hydrogen." But a grave work, which professes to be a deduction from facts, and to establish the most important part of philosophical chemistry on scientific principles, should not rest its merits on vague conjecture and unprofitable hypothesis. The validity of the opinions here advanced depends on the idea that the metals are compounds of peculiar bases with hydrogen; but as this has never been proved, as hydrogen has never been detected in those substances, we are warranted in withholding our assent to the proposition; and this too in conformity with the soundest and most important maxim in all chemistry, that bodies are to be considered simple till they are proved to be compound.

"It must be remembered," says Dr. Coxe, "that all the bodies capable of reducing metallic oxides, possess this principle, hydrogen; I believe few, if any facts oppose themselves to it." He acknowledges however that the revival of quicksilver is an exception to this observation. But does not heat alone reduce the oxides of many other metals? has not light a considerable deoxidizing power? and are they not decomposed by voltaic electricity, and by each other? Pure dry potash in fusion, according to the experiments of Sir H. Davy, is readily decomposed by the operation of galvanism; and if it be dry, whence comes the hydrogen necessary in the hypothesis of Dr. Coxe to metallize the potassium? Oxygen is easily separated from gold, silver, lead, and some others, and the metals restored to their me-

tallic state by the simple expansive power of heat, and in such experiments there is no obvious source of hydrogen. It cannot, on the principles of our author, constitute an essential part of the oxide, because, according to his idea, it either separates entirely when the metal becomes oxidized, or if a portion of it be retained the compound must discover acid properties. It cannot arise from the presence of a small quantity of water, for even on the supposition that the oxide contained a portion of that fluid, which is extremely improbable, considering the degree of heat to which it is exposed for its reduction, there is no reason why it should be decomposed, as hydrogen is already combined with oxygen to the point of saturation; and with still less probability can it be supposed to be derived from the air of the vessel in which the experiment is conducted, as the reduction *will* be effected even when all air is excluded. If therefore in so many instances the oxides may be reduced, and the metals restored without the presence of hydrogen, it seems necessarily to follow that the principle laid down by Dr. Coxe is too limited in its operation to be considered in the light even of an hypothesis, much less in that of a legitimate theory.

Nor is there, in our opinion, much greater foundation for the opinion, that in the reduction of metallic oxides by voltaic electricity a portion of the hydrogen is made to combine with the metal, because when this process is not effected, that principle is disengaged, and when it is, its production or evolution ceases. For the solution is as simple and equally satisfactory on the common idea that the whole of the hydrogen combines with the oxygen of the oxide to form water, as that one portion of it should be destined to form a constituent of the reduced metal. But Dr. Coxe asks where does the hydrogen go? "No doubt," says he, in an ironical tone, "to form water with the oxygen of the metal!" and he endeavours to place this solution of the question in a ludicrous point of view by a very *apposite* quotation from the elegant author of the Padlock on the omni-presence of Mungo. Notwithstanding, however, the attic wit of the professor, we are inclined to think his arguments less irresistible, and, as he has not brought forward a single new or convincing fact in confirmation of this part of his hypothesis, we shall take the

liberty of believing the latter with the same sincerity as we admire the former.

The argument in favour of a common inflammable principle drawn from the consideration of the existence of other principles which are regarded as universal, as caloric, light and oxygen is valid, so far as analogical reasoning may be allowed in a work of this nature.

At page 22 the theory of Dr. Coxe is thus developed.

"As combustion is undoubtedly a case of compound affinity, we may suppose, with Dr. Thompson, that in this process the oxygen of the oxygen gas combines with the combustible, and produces the alteration we see in its properties; whilst the caloric of the gas unites with the (hydrogen, and perhaps the) light of the combustible, and flies off in the form of flame."

The peculiar theory of the author is here defined in the parenthesis. As he says nothing of the combustion of hydrogen, we shall take for granted only what is here expressed, that the flame observed in this process is the result of the combination of light and caloric with the hydrogen, which is dislodged from the inflammable body by oxygen.

This theory, we confess, does not appear to us to give a satisfactory solution of the phenomena of combustion. Let us assume as a fact, that hydrogen exists in a concrete form, or constitutes an essential ingredient, in all inflammable substances, is it reasonable to suppose, that this principle, when disengaged by the operation of intense heat, and in contact with the air, should not undergo combustion; and that it should act merely as a vehicle for conveying off the large quantities of caloric, and of light, rendered sensible by the condensation of oxygen gas, and the union of its base with the inflammable body? In arguing from all the circumstances connected with this process, is it not most consistent with them to infer, that, in those cases, in which hydrogen is evolved from its combinations by the heat generated in combustion, it should take fire on coming in contact with oxygen gas? And if so, the light of the one, and the caloric of the other, will be produced in quantities proportional to the condensation of these gazeous fluids; and these

agents will appear in part to be the result of the change of properties in the substance, which is supposed, by Dr. Coxe, to constitute in its proper form of air, a necessary ingredient of flame. If the author advance the opinion that the hydrogen passes off without combustion, and, in the passage above quoted, no intimation is given of its combining with oxygen, he must regard as a fact what has been directly disproved by the experiments of Dr. Fordyce and Mr. Wedgewood, that the airs are capable of being ignited, or of becoming red hot. This inference seems necessarily to follow from his own principles; for if hydrogen be burnt, or, in other words, be made to combine with oxygen at the moment of its evolution from the combustible body, it can no longer be considered as the vehicle of light and heat, but a part of these principles must be the effect of the change of properties, by which it is thus rendered incapable of performing the part assigned to it in this theory of combustion. When, therefore, hydrogen is disengaged without being inflamed, its capacity for caloric, and probably for light, will be augmented in proportion to the intensity of temperature; in consequence of which, these agents will be absorbed, or will pass from a sensible to a latent state; and it is not probable that the same substance should be employed in the double office of absorbing and of evolving the same principles at the same moment. The great capacity which hydrogen has for caloric, a capacity which is superior to that of any other of the combustibles, and even to that of oxygen, is considered by Dr. Coxe "as no small point in favour of its being the universal inflammable principle." With us, however, it has but little weight; since, in relation to the process of combustion, we are to regard it in most instances as existing, not in the form of air, but in that of a solid; and, as it is most probable, that where it does exist in inflammable bodies in a solid state, it must combine with oxygen during the process of combustion, in its nascent state, or at the moment it is about to assume the elastic form, the quantity of heat evolved can bear but a very small proportion to that which is rendered sensible by the condensation of oxygen gas. Lastly,

"That caloric and light," says Dr. Coxe, "do not alone constitute flame, is, I think, evident; since, united as they are supposed to be, in the solar rays, they do not reach us in that form. The reason is obvious; they cannot produce flame unless by combination with the inflammable principle, which they always meet with, as hydrogen, in every combustible body. The most powerfully concentrated solar rays produce no flame in incombustibles:—They fuse and volatilize the hardest incombustible, 'tis true, but no flame follows; yet caloric and light are both present in the concentrated rays, as well as, probably, in the body exposed to them; but the defect of this inflammable principle, as a constituent of the body, effectually precludes the possibility of flame."

On this principle we are to conclude, that if these bodies contained hydrogen, and the concentrated solar rays had the power of separating it from these compounds, the phenomenon of flame would be exhibited; and of consequence that flame may be produced independent of the process of combustion, whenever hydrogen is disengaged from its combinations by the operation of a red or white heat, in which, it will not be denied, light and caloric exist in intensity. Accordingly, in the common process for obtaining this inflammable air by passing the vapour of water over the surface of iron strongly ignited, we ought to find our receivers filled, or our bladders inflated, not with an attenuated elastic and invisible gas, but with flame!

Having thus taken a cursory view of Dr. Coxe's theory of combustion, we shall enter with equal conciseness on the consideration of the arguments, by which he has attempted to establish a theory of acidification. Hydrogen holds as conspicuous a place in the latter as in the former; for he considers this principle as equally essential to the constitution of an acid as oxygen. For example, in the formation of sulphuric or molybdic acid, Dr. Coxe supposes, that during the combustion of the sulphur, or the oxidizement of the molybdena, in whatever way it may be effected, the hydrogen, which makes an essential part of the base of either of these bodies, is not completely disengaged, but that a greater or smaller proportion is retained, and imparts to the oxigenised sulphur, or molybdena, the power of producing the effects of acids. This class of substances then, according to this view of acidification, owes its properties to the presence of

oxygen and hydrogen, combined with combustible bases. Without entering in detail on the history of the opinions respecting the existence of an acid principle, the author thinks it sufficient to observe, that by the present doctrines, oxygen is supposed to be that principle.

"We shall find, however, some bodies possessed of acid properties, in which oxygen has not been as yet detected; whilst on the other hand, we shall find numerous instances, of the union of oxygen with bodies, in larger quantities than enter into acids, without giving to them any acid properties."

And, at p. 26. he adds,

"If then we consider it as a fundamental axiom, that oxygen is the principle of acidity, we must include among that class, many bodies *having* no resemblance to acids; or exclude several, which possess the properties of acids in perfection."

We do not assent to this proposition. If we suppose oxygen the principle of acidity, it does not follow, that all bodies, with which it is combined, should discover acid properties. It is sufficient to establish the principle, if the fact can be proved, that all substances which are acid, do contain oxygen. Now setting aside a few of the minor acids, which have not been thoroughly investigated, and which by many have been considered merely as the acetic, somewhat disguised, we know but of two, in which oxygen has not been detected, and these are the prussic and muriatic acids. With regard to the first, the experiments of Scheele, and of Vauquelin have rendered the belief of the existence of oxygen in it very probable, and with respect to the last, supposing the researches and conclusions of Sir H. Davy to be correct, we have a strong confirmation of the necessity of oxygen to produce acidity; for although he affirms that muriatic acid contains no oxyen, yet he has proved, that it is a compound of hydrogen and oximuriatic gas, which though distinct from, yet belongs to the same class of bodies as oxygen; that is, it possesses many of the properties of that principle, one of which we well know is to acidify those bodies with which it is combined. If oximuriatic gas be a simple substance, it may possibly combine with oxygen, and form an acid compound, and

it appears from the late experiments of the above mentioned chemist, that such a combination does actually exist, the one to which he has applied the terms Euchlorine gas, and which is faintly acid. Dr. Coxe proceeds,

"I shall of consequence be here asked, if hydrogen is a *sine-qua-non* of acidification to combustible bodies, why, itself a combustible, and combining with a larger amount of oxygen than either of them, water is produced, and not an acid? To this I reply, *the hydrogen wants a base;* by its union to which oxygen can then induce acidity."

By this we understand the author to imply, that every acid is a ternary compound of oxygen, hydrogen, and a base. But if this be the case, how will he explain the formation of nitric acid? Is nitrogen a simple substance? Where then is the hydrogen to co-operate with the oxygen to produce acidity? Is it not one of the opinions derived from the experiments of Sir H. Davy, and indeed the most probable, that it is an oxide of hydrogen, or is composed of the same ponderable matter as hydrogen, which by the presence of a small quantity of oxygen, is made to display properties differing from those of simple hydrogen gas? How then can the mere addition of more oxygen to this oxide, be supposed on the hypothesis of Dr. Coxe, to enable the compound to exhibit such well known, powerful acid properties? The oximuriatic gas, is considered by Sir H. Davy, as a simple substance, and he has proved, that when united with oxygen, it forms an acid compound. In this instance also, two substances only are employed, and we look in vain for the hydrogen which the Pennsylvanian Professor thinks indispensable to acidity. Again, if we assume as demonstrable facts, the results of the late researches into the nature of muriatic acid, it must be regarded as a compound of hydrogen, and oximuriatic gas, where then is the base, which makes so conspicuous a figure in the hypothesis of Dr. Coxe?

"Of 37 acids" says our author, "enumerated by Thompson, it would appear that 25 of them possess hydrogen as a constituent." Most of the vegetable and animal acids, do contain hydrogen as an essential part, but we know of no experiments which have demonstrated its existence in those, resulting from the combination of oxygen with sulphur, phosphorus, carbon,

boracium, the fluoric basis, and the acidifiable metals. Even granting that these bodies in their uncombined form, do contain this principle, it does not follow that a portion of it is retained by them, after their combination with oxygen. No experiments with which we are acquainted, will warrant this conclusion, and in reasoning on the properties of hydrogen, it appears to us that the argument is against the supposed fact. It seems to us a little singular, that while Dr. Coxe is labouring to establish the hypothesis of an universal imflammable principle, and to found his theory of combustion on its disengagement from bodies, he should also attempt to prove that acidification, which he regards as a perfectly analogous process, is the result of its partial retention. We cannot avoid comparing the attempt with the speculations of Count Rumford, who vigorously defends the hypothesis of the immateriality of caloric, and materiality of cold; and while he considers the former as a mere negative quality of bodies, endeavours to demonstrate, that the effects of the latter are to be referred to the action of certain invisible frigorific particles. It would be more reasonable, according to the notions of our author, to suppose, that if a portion of hydrogen were still combined with a metal, notwithstanding it had been burnt, it would still continue to exhibit, in a greater or less degree, proportional to the quantity of that principle, the usual physical properties of the body.

We have now expressed the few ideas, which naturally suggested themselves to our minds, on examining this pamphlet of Dr. Coxe. We have said, at the commencement of our remarks, that the enunciation of this theory, is, perhaps, at this period, premature. By this we mean, that considering the relations, existing between a professor and the pupils of a medical school, it is inexpedient to teach a theory, which cannot be supported in all its parts; or founded on supposed facts, which have not been, or, from their nature, are not susceptible of being satisfactorily demonstrated. The student enters the lecture-room with little or no knowledge of the principles of the science he is to be taught; and he looks up to the professor, not only as a guide to what is right, but as a guard against his adopting what is wrong. He has confidence in his talents and acquirements, and

is thus ready to imbibe, as demonstrable truth, every thing which falls from his lips. If incorrect, or incomplete theories be advanced, he will find himself under the necessity, as he proceeds in his investigations, of unlearning much of what he has taken such pains to store in his memory; and when perhaps it is too late, he will perceive, that to acquire a knowledge of the science as it is, he must recommence the study of its fundamental principles. Hence, although every chemist may be right in making his own deductions, and in forming and even publishing his own theories, which the world may adopt or reject at pleasure; yet it behoves every professor to proceed with caution, in teaching hypotheses instead of theories, and novel or remote analogies, in the room of facts.

In making these observations, we have been influenced by no personal considerations, and have no desire to interfere with the official duties of the professor.* In fact, we have long felt ourselves acquainted with, and have long respected Dr. Coxe, as the able editor of one of our most useful Journals, and, if in this instance, our opinions do not coincide with his, time and farther research may cause us to retract what has here been said. When direct and unequivocal experiments shall have established the facts, that hydrogen is a constituent principle of every combustible, and an essential ingredient in every acid, we will readily resign our opinion, and adopt the theory of the Philadelphia professor.

* In the preface to this pamphlet, the author observes, that the " chief part of it, formed the substance of a lecture to the chemical class."

INTELLIGENCE.

MEDICAL LECTURES.

THE winter course of lectures in the Medical School of Harvard University will commence in Boston on the first Wednesday in November; on

Anatomy and Surgery, by Dr. *Warren*, and Dr. *Warren*, *jun.* at one o'clock P. M.—$20.

Chemistry and Materia Medica, by Dr. *Dexter* and Dr. *Gorham*, at ten o'clock A. M.—$15.

Clinical Medicine, by Dr. *Jackson*, at four o'clock P. M. —$15.

The students will have access to the valuable library collected for the institution, by the munificence of *Ward Nicholas Boylston*, Esq. and also to the Clinical School of Medicine and Surgery in the almshouse, without additional expense.

Dr. *Channing* proposes to give a course of Lectures this winter on the Theory and Practice of *Midwifery*, at No. 49, Marlborough Street, Boston.

Medical Graduation in Harvard University.

On Friday preceding the Commencement at Cambridge, was held the public examination for the degree of Doctor of Medicine in the Philosophy chamber, in presence of the Rev. President and Professors of the University, and such medical gentlemen as pleased to attend. Each candidate, having previously read his dissertation, was questioned by the medical professors on such points as appeared to admit of dispute, and called on to defend the positions he had taken. The defences were conducted in such a manner as afforded great satisfaction to the medi-

cal professors, and would not perhaps have been thought unworthy of older seminaries. The following are the names of the gentlemen who received the honours of the university at the public commencement, together with the subjects of their dissertations.

Francis Moore, of Ipswich, in the county of Essex, "*On Injuries of the Head.*"

Thomas Sewall, of Ipswich, in the county of Essex, "*On Diseases of the Pancreas.*"

Thomas Stearns, of Wiscasset, in the county of Lincoln, "*On Hydrocephalus.*"

William Swift, *A. M.* of Dorchester, in the county of Norfolk, "*On the nature of Contagion, &c.*"

Walter Channing, *M. D.* Penns. was admitted *ad eundem.*

Barton's Elements of Botany.

The first volume of the second edition of this valuable work has reached us. The former edition was published in ——, since which time it has passed through an edition in England, and been highly spoken of in Aikin's Annual Review. Its favourable reception in this country is attested by the early occasion for a second edition.

As an introduction to botany, Dr. Barton's elementary work has uncommon claims upon the American student. It is one of the most complete and extensive books of the kind, containing all that is necessary for understanding the terminology of the science, the physiology of vegetables, or their systematic arrangement. Most of its illustrations and examples are taken from American plants, a facility which in the United States gives it a peculiar advantage over European publications.

The second edition of the first volume contains several valuable additions. Two new plates are annexed, with copious explanations. They illustrate the principal forms of leaves, and are chiefly copied from native plants. A general index of twenty pages, which from its minuteness may answer the purpose of a Botanical Dictionary is also annexed to this edition.

The indefatigable author, in addition to the second volume of the present work, has promised the public a Flora of the state of Virginia, a Prodromus of a Flora of the states of New York, New Jersey, Pennsylvania, Delaware, Maryland, and Virginia; a work on the geography of North American trees and shrubs; an elementary work on Zoology; a volume on the Indians of North America; and the third part of Collections towards a Materia Medica of the United States. Some of these works are speedily to appear.

Officers of the Massachusetts Medical Society, elected at the annual Meeting in June, 1812.

John Warren, M. D. *President.*
Joshua Fisher, M. D. *Vice President.*

David Townsend, A. M. Thomas Welsh, M. D. Aaron Dexter, M. D. Josiah Bartlett, M. D. William Spooner, M. D.	*Censors.*

Thomas Welsh, M. D. *Corr. Secretary.*
John C. Warren, M. D. *Recording Secretary.*
John Fleet, M. D. *Librarian.*
John G. Coffin, M. D. *Treasurer.*

Hon. Oliver Fiske, Drs. Jonathan Osgood, Thomas Babbit, Abraham Haskell, Austin Flint—*Censors of the District Society in Worcester.*

Dr. Mason F. Cogswell, of Hartford, Connecticut, was elected honorary Fellow of the Massachusetts Medical Society at the meeting in June.

Case of Calculus removed, by Dilatation, from the Female Bladder.

A woman named Keen, who had not been able to retain her urine since her last delivery, which was a year ago, was lately admitted into Guy's hospital for the stone.

On the 21st of June, a piece of sponge was by order of Mr. Astley Cooper, introduced into the meatus urinarius, and on the 22d the sponge was withdrawn, and a pair of middle sized stone forceps were easily passed into the bladder, and a stone of one inch and a half long by one inch wide was extracted.

On the 27th she was discharged from the hospital free from symptoms of stone, but the incontinence of urine continues as before the operation. *London Med. Rev.*

Dilatation of the Male Urethra.

A boy aged four years laboured under suppression of urine. On attempting to introduce a catheter it was obstructed by a stone, lying in the membranous part of the urethra. A very small catheter was introduced to draw off the urine.

The surgeon afterward introduced a sponge tent into the urethra, and allowed it to remain till the next day, when the same operation was repeated, and thence every day for about a fortnight, the size of the tents being daily increased. At the end of this time the passage was so much dilated as to admit the introduction of the little finger. One morning, in making an effort to pass his urine, a calculus, of the size of a large nutmeg was passed; and on the following day, two more of the same size. In a short time the boy gained strength, and the perfect use of his limbs, as well as the power of retaining urine. The tents employed were in the form of bougies, which were made by rolling together long strips of well prepared sponge. *Ib.*

Fungus Hæmatodes.

In a case of fungus hæmatodes on the os ilium, examined in Guy's hospital, the same disease was found perfectly characterized in the lungs. There was likewise an abscess in the liver.

Effect of a Ligature on the Iliac Artery.

The remarkable effect which follows the application of a ligature to an artery and its subsequent removal, as mentioned by

Dr. Jones in his very valuable treatise on hæmorrhage, is exemplified in the following, which also illustrates the effect of the temporary application of a ligature for the purpose of curing the varicose saphena vein.

A man underwent the operation of castration; the arteries were separately tied, but in a few hours after a ligature came off and a profuse hæmorrhage followed. Various means were used to restrain the bleeding, but it recurred at different periods for several weeks. The spermatic cord was followed by a dilatation of the abdominal ring, and pressure by means of a spring truss employed with as much force as could be borne. At the expiration of some weeks from the application of the truss, violent hæmorrhage took place from a very large vessel passing from the thigh in a direction upward and inward. In this emergency the external iliac artery was exposed by an incision. A ligature was placed round it, and when drawn tight the hæmorrhage ceased. In a few minutes the ligature was removed, and the circulation was observed to be carried on in the artery, below the part where the ligature had been applied. A slight hæmorrhage took place afterward, but the wound did well, and had granulated and nearly healed, when the patient was destroyed by a pulmonic disease. Upon dissection, the external iliac artery was found completely obliterated for the space of three inches, extending from the origin of the internal iliac to the point where the vessel passes under Pauport's ligament. It should be observed that the vein in the same situation was likewise obliterated by a very firm plug of coagulum. *London Med. Rev.*

Wound by a Cannon Ball.

In the action between the Constitution and the Guerrière, an English sailor was struck on the fore part of the thigh by a 24 pound shot, which carried off the skin and the outer muscles leaving a wound about a foot in diameter. The bone was not injured, nor even the inner layer of muscles, and the wound did well. If the passage, alone, of a ball near the body, or what has been called the "wind of a ball," is sufficient to reduce the

muscles to jelly and bones to splinters, it seems difficult to explain why the same thing should not happen in such cases as this, where an actual contact of the ball took place.*

Letter on Stramonium.

By Dr. Bree, author of a treatise on Disordered Respiration.

I very willingly comply with your request that I should report the result of my observations on the efficacy of stramonium in cases of asthma that have fallen under my view.

In certain cases I tried the extract of stramonium many years ago, but I was not encouraged by my experience at that time to pursue the practice of giving it in general cases of asthma.

In the last year the public were informed, by writers in journals and newspapers, that the smoking of this herb produced ease, and even effected cures in convulsive asthma. The authorities for such success were of a mixed character, some of them being satisfactory, as far as they reported benefit in the fits of asthma; but others, more numerous, were very suspicious, as they were not sanctioned by names, and most of them asserted *cures* after the use of the remedy for a very short time in this disease, of which the access of the paroxysm is both periodical and uncertain.

The evidence of advantage from smoking stramonium had a doubtful aspect to a considerate physician, and this character was not rendered more clear by the appearance of a "Familiar Treatise" on the subject, pretended to be published by Mr. Surgeon Fisher. Much of the matter in that treatise I knew to be wholly false, whilst the chief object of it was clearly displayed by the recommendation of stramonium in a *secret* composition, after the manner of other empirical nostrums.

* Since the above paragraph was written, we have noticed a remark made by Dr. Spence in the last number of the Edinburgh Journal, which conveys the same idea. Dr S's paper relates to the wind of a ball. He seems inclined to attribute the effects imputed to it to a blow from some light substance impelled by the cannon ball with great velocity.

Mr. Toulmin, of Hackney, gave the only testimony that deserved attention respecting the use of stramonium in asthma; but this gentleman, with the power of confuting the pretensions of others, did not offer himself to the public notice; and the same reserve which distinguishes the professional man of science, seems to have restrained him from publishing hasty conclusions from particular facts, that are too often generalized and made subservient to unworthy purposes. I was acquainted, in a private manner, with Mr. Toulmin's use of stramonium by inhaling it; and the success which some sufferers had experienced in fits of asthma from following his practice, induced me to mention it as a possible means of obtaining relief, when other antispasmodics had been tried without effect.

From the beginning of the present year I have been more attentive to the effects of this practice.

The number of cases which I have had occasion to examine, between that period and the end of April, was 82. The patients were all disturbed in their breathing, but only a proportion of them was truly affected with convulsive asthma. To the whole number the remedy had been either useless, as regarded the removal of the disease, or it had produced injurious or fatal effects. If any signal advantage from the use of stramonium had been experienced, I should probably not have been consulted, and my report is therefore not intended to deny the success that may be asserted to have taken place in cases I have not seen. You will consider it as a faithful report respecting 82 cases of patients who had smoked this herb under various diseases, which were supposed to be asthmatic.

Those who had smoked stramonium without any permanent good effect amounted to 58. The remaining 24 had all of them been more or less injured, and some of them destroyed by the practice. I shall only mention cases which were brought to a certain state, admitting of safe inferences as to their further progress, at the end of April. They had been all of them observed with sufficient attention to enable me to ascertain how far stramonium was capable of mitigating or removing asthma.

The first list of 58 included 11 cases of obstructed liver; these patients had lost their time in relying upon stramonium; but I

do not place this inconvenience among the injuries derived from the practice of smoking this herb, because the constitutions of the patients were yet so vigorous as to be capable of bearing the necessary evacuations. All of them had constant dyspnœa, and most of them had experienced paroxysms of convulsive breathing at intervals. Three were in an advanced state of the disease, having hard bellies, and swelled legs. Seven gradually recovered by the treatment that was applied for the removal of congestion in the liver, their dyspnœa leaving them as the disease of this organ gave way. These 11 cases shew the effect of advice which people, ignorant of the distinction of diseases, give with confidence to their friends without any authority excepting that of the advertisements in the newspapers.

The remainder of the 58 patients had the usual signs of the asthmatic constitution. They were generally satisfied with a plan, less miraculous in the promise of immediate cure, but more likely to restore tone to their habits, and with the assurance that relieving the convulsive paroxysm of asthma is not removing the disease. I had seen many of them before, and some of these did not refrain from complaining of the assent I had given in the winter to their trials of stramonium in the difficulty they experienced of appeasing the fit.

The 24 patients who have been stated to have suffered injury from the smoking of stramonium were all disordered in the breathing, and their dyspnœa, at intervals, assumed the form of convulsive asthma.

Of this number I shall first mention seven patients, whose symptoms indicated phthisis, and whose lungs were weak, and had been long subject to inflammatory attacks on changes of weather, and the taking of colds. The oldest of these was 35 years of age. Their habits were thin, irritable, and weak; and the pulses of all of them, in their best state, of a dangerous quickness. In their former attacks of difficult respiration, small bleedings, with blisters and febrifuge draughts, that gently promoted expectoration, had always afforded relief. They came under my care in March and April, and all, without exception, attributed the aggravation of their complaints to the smoking of stramonium, or to the use internally of the oxymel of stramo-

nium. Some of these patients were relieved by the same means as had been before repeatedly applied to their cases, but three of them spat blood, after violent heat and stricture under the sternum had continued for many days. They now expectorate pus, and are greatly wasted with hectic fever and night sweats, and give no prospect of a fortunate result from any mode of treatment.

Three persons, who had passed the meridian of life, and had suffered asthmatic affections, and coughs, for many years, with great debility and emaciation of the system, experienced paralytic tremblings from smoking stramonium. Their original complaints were also generally aggravated, excepting their cough, which subsided as their weakness increased. The pulse in each of these patients was so lowered, that it became difficult to feel the beating of the artery. After abandoning their practice of smoking, which two of them had pursued every evening for two weeks, and one twice a day for ten days, they took strengthening draughts with gentle expectorants. The cough then returned to each patient, and they all recovered their former degree of health.

A lady advanced in life, of weak constitution, and particularly feeble nerves, had been long subject to coughs and asthma. She had smoked the stramonium a few times only, and it affected her head with pain and confusion, and her stomach with sickness. She was next seized with an epileptic fit, the first she had ever experienced. This attack was followed by three more fits of the same kind, at intervals of a few hours, and she became nearly insensible. The cough left her, the pulse became scarcely perceptible, and her mind was no longer capable of any exertion. She was not wholly unconscious of her state, but her stupor and somnolency overpowered the little energy she possessed, and her stools and urine passed involuntarily. At first it appeared necessary to remove congestion from the head by cupping, leeches, and blisters. Strengthening medicines were then employed in consultation with Dr. Latham. The patient slowly recovered from this critical state, and attributed her epileptic fits, and preceding confusion of head, to the smoking of stramonium.

Four persons, all of full habits, and two of them, strictly speaking, apoplectic in their forms, smoked stramonium for the cure of dyspnœa, which they called asthma. After some days experience of this practice, one of them was still capable of coughing, but with so much pain of his head as to indicate immediate danger. He was sixty years of age, and the other three were more than fifty. They so convincingly required depletion that I was surprised it had not been advised by the most superficial of their friends. Evacuations by bleeding and purging removed the difficulty of breathing, and probably preserved the lives of more than one.

The smoking of stramonium has been practised by many female patients. I saw two patients, of the ages of forty-five and forty-nine, of very plethoric habits, and each of them had experienced the inconvenience which so often follows the cessation of the menses. They wheezed much, and their breathing was oppressed upon every motion of their bodies. Without taking any measure pointed out by the actual condition of their habits, and from being informed only that they had asthma, they adopted the practice of smoking stramonium, and became rapidly worse. Pneumonic inflammation affected one, and intolerable headachs, with dimness of sight, attacked the other. They however obtained relief by the active application of the necessary treatment.

An elderly man, whose complicated disorders had begun with obstructed liver three years before, was icteric, and anasarcous, with a hard belly, and irregular pulse, and had not lain horizontally for several weeks. His respiration was laborious, and he could not leave his bed without much increased agitation. I had seen him once, two weeks before; and I was called to him again in the present state. I found that he had been smoking stramonium for the last two days, and he died the night after I saw him without taking medicine.

Instances of patients in hydrothorax who had applied to the fumes of stramonium, must have occurred very often to practitioners in this town during the last three months. I have seen six cases of this kind, and I am confident that at least half of them were so quieted by the practice, the force of the circula-

tion through the lungs was so reduced, and the irritability of the frame so far exhausted, that they died prematurely as regarded the state of the disease.

The patients who suffer injurious or fatal consequences from smoking stramonium, are chiefly those who have apoplectic or paralytic habits; young persons affected with insidious spasmodic breathing, but who are actually consumptive; and elderly persons whose protracted complaints had ended in hydropic effusion in the chest. The effects of stramonium must be referred, as Cullen has remarked, to its narcotic power; and if it be considered how universally the practice of smoking this herb has been diffused by the exertions of selfish interest, or of ignorant enthusiasm, the mischief that health and life have suffered from its use may be conceived, but cannot be very readily estimated.

I have had reported to me many deaths from smoking stramonium, and I have verified many facts of this kind, without attending to doubtful effects in cases that might have been lost without its influence. I do not go into these cases, but have spoken only of what I have seen.

Med. and Physical Journal.

Leeches.

These valuable animals having come into use in this part of the country but lately, a regular supply is obtained with difficulty. The following article from a Pharmacopœia Chirurgica, lately published, gives the necessary instructions for breeding and employing them.

The freedom with which topical blood-letting is now employed, may be considered as one of the improvements of modern surgery; and in many cases one of the most effectual and least objectionable, is by the leech. These animals, however, are become so extremely dear, either from the exactions of those people who gather them, or by the monopoly of our drug merchants, that the patient is very frequently under the necessity of enduring his pain and sufferings from the utter impossibility of procuring what his surgeon has prescribed. To remedy this evil, every surgeon ought, so far as he has the means in his

power, to procure a quantity of leeches at the time the leech-catchers gather them, when they are much cheaper, or indeed with little care and trouble he might breed a sufficient number every year to answer his purposes. In order to breed them, a large stone reservoir or wooden cistern nearly filled with soft water and provided with a shelving, covered with moss and sods, should be placed in such a situation that nearly the whole of it is exposed to the rays of the sun: the bottom should be furnished with a cock, having a strainer answering to it on the inside to allow the water, which should always be brook or river water, to be drawn off occasionally; but this should not be done more than twice a month in winter, and once a week in summer. If a little muddy water is first poured into the reservoir or cistern, the leeches will in general thrive better. The greater number of the full sized leeches after the breeding season, which is during the summer months, should be removed into open mouthed bottles, which should occasionally be exposed, or half exposed to the sun; taking care that they are never more than half full of water, as the leeches are extremely fond of creeping up the dry part of the bottle in order to drain themselves; when kept in vessels the water should be changed every day in summer. During the cold season, the reservoir should be surrounded with warm manure. The young leeches are some years before they arrive at full growth, during which they should not be removed from the cistern.

When a leech is to be applied, it should be removed from the water some short time previously, and placed on a dry towel. Some surgeons direct them to be placed in glasses to be inverted over the part from whence the leeches are intended to draw blood: a piece of writing paper, folded into a conical shape and cut smooth at the open end, is neater, and answers equally well. The part or parts to which they are to be applied should first be well spunged with warm water and soap, in order to remove every odorous substance; and after washing, must be dried thoroughly. If the weather is cold, the leeches may be immersed in warm water, before they are applied. If the leeches do not fix immediately, it is useful to moisten the part with cream, or sugar and milk, or the juice of raw meat, or, which answers bet-

ter, to puncture the skin with a needle or lancet, in a number of places. After the leeches have filled themselves and lose their hold, they should be placed on a plate or saucer, and have their heads covered with salt, which occasions them to vomit up the blood with which they have gorged themselves. After this they should be put into water just warmed. If it be desirable to keep up the bleeding, the part may be immersed in warm water, or cloths dipped in warm water may be applied to it. If the bleeding is to be stopped, a little fine flour, or pressure with a fold or two of dry linen, will usually effect what is wished.

In all local phlegmonous inflammations, whether from injury or any other cause, leeches afford one of the most effectual modes of relief, and they are often invaluable. In slow inflammations taking place in the large joints, or near them, in ecchymosis, in boils, whitlows, in schirrus, when painful, and when there are hopes of effecting a cure, leeches constitute an important remedy.

Test of Arsenic.

In the London Medical and Physical Journal, for August, 1812, Mr. Joseph Hume, of Long-Acre, reclaims from Doctors Marcet and Roget the credit of first publishing, in the Philosophical Magazine, the property of silver as a delicate test of the presence of arsenic.

On Ipecacuanha.

To the Editors of the London Medical and Physical Journal.

GENTLEMEN,

You possibly may remember, that in my small publication of August 1801, on diseases of the army, &c. I have mentioned that I first prescribed decoctions of ipecacuanha as injections in dysentery, at Columbe, in the island of Ceylon, in the year 1797, when I was surgeon of his majesty's 19th regiment of foot.

It affords me much pleasure to state, that, during my residence in France for upwards of these last nine years, I have had many opportunities of observing the good effects of ipecacuanha decoctions, not only in dysentery, but also in internal piles, and in flatulent distension of the bowels, from whatever cause they may have arisen.

While at Verdun in France, I likewise received a very satisfactory account concerning the effects of the same medicine from Mr. Connin, surgeon of the navy, who was made prisoner of war in the Mediterranean. He asserted to me, that during last war, while on the same station, he lost many men of dysentery; but that, during the present war, although he had the charge of a considerable number of sick laboring under dysentery, yet he did not lose one patient. This astonishing difference of success he attributes chiefly to ipecacuanha injections.

Since my return to London, I also have obtained very satisfactory additional information on the same subject from my friend, Mr. Archibald Barklimore, surgeon, of High Street, Bloomsbury.

In a letter from our mutual friend, Mr. Baird, surgeon in the Hon. East-India Company's service, to Mr. Barklimore, dated Tigris, off the Cape of Good Hope, 18th May, 1810, the following passage is contained: "With regard to professional news, little has occurred in our ship to afford opportunity for observation. I cannot help mentioning, however, (because it gives me much pleasure,) that a case has lately occurred in which the valuable remedy that our friend Clark communicated to us has been very successful in curing dysentery. One of the ship's company, who had been afflicted with dysentery for several weeks, and who had been much reduced by mercury, (which seemed to be the cause of the disease,) was snatched from the jaws of death by the ipecacuanha given in clysters. Mr. Graham, surgeon of the ship, consulted me when he had lost all hopes of his patient's recovery. At this time his evacuations were generally slimy, mixed with blood, and he sometimes passed liquid stools of the colour of coffee. I recommended the ipecacuanha, and, though my hopes of its being beneficial were by no means sanguine, I was delighted to find that the poor man

was soon relieved by it. I expect to do much good with it in India."

Another letter to Mr. Barklimore from Mr. Baird, dated Port Louis, Isle of France, 5th Dec. 1810, contains the following observations: "I was attached to the 22d regiment, and embarked with Colonel Kelso, in the Illustrious, 74, with a detachment of 175 men. We had a long passage, and were sickly. Dysentery made dreadful ravages amongst the ship's company. Nearly 70 men died of it in nine weeks. I was very fortunate in only losing three, and two of these were old bad cases. I used Clark's remedy freely with much advantage."

In a third letter from Mr. Baird to Mr. Barklimore, dated Port Louis, Mauritius, 10th Nov. 1811, the subsequent remarks are made: "I have mentioned to you before how successful I had found Clark's mode of treating dysentery. I have daily opportunities of confirming it. Most of my fellow-labourers have been in a situation to judge of its effects, and have all, I believe, adopted it. I did not fail on these occasions to do him the justice of quoting him as the teacher of the practice. A few days ago I went into a bookseller's shop here, and, in rummaging over a parcel of medical books, his little work presented itself to my agreeable surprise. I was not long of buying it, you may be sure. I have derived the greatest pleasure from a perusal of it, and shall certainly consider myself indebted to him for much valuable practical information."

Hence it would seem that the use of decoctions of ipecacuanha in dysentery will soon become general. It would therefore be highly gratifying to me, and probably very beneficial to mankind, if your readers who may have prescribed the remedy in question would acquaint the world at large, through the medium of your valuable Medical Journal, with the effects produced by it under their directions.

I here think proper to mention, for the information of those who have not seen my publication of 1811, that the form of decoction which I found most successful in adults, was about three drams of ipecacuanha boiled in a quart of water down to a pint, strained, and given all at once as a lavement. In cases of internal piles, for reasons that must appear obvious to every one, it

is in most instances unnecessary to administer more than half a pint of the medicine at a time.

I have the honor to be, gentlemen,
With the utmost respect,
Your most obedient servant,
THO. CLARK, M. D.

No. 17, Denmark-street, Soho, June 17, 1812.

From the London Medical and Physical Journal, for August, 1812.

Cases of Small-Pox after Vaccination; copied from the Minute Book of the original Vaccine-Pock Institution, Broad-street, Golden-square.

We have been permitted to transcribe the following most interesting minutes from the Record Book of the original Vaccine Pock Institution—an institution distinguished for its independence and courage in the assertion of truth during the violent contentions of other opposing parties.

MAY 5, 1812.—Mrs. Ancell, shopkeeper, No. 3, King-street, Fire-fields, Chelsea, attended this day to state that she had three children ill of the small-pox after vaccination at this institution, and a fourth ill of the natural small-pox, not previously vaccinated.

On consulting our registers, it appears that these three cases of asserted failure, had gone through the cow-pock at this institution, viz.

1. Mary Anne Ancell, No. 401 on Dr. Nelson and Mr. Carpue's list, was vaccinated March 31, 1801, then eleven months old, at the breast, with eight-day matter, and went through the affection in a regular manner; with one fine large vesicle.

2. John Ancell, No. 1736 in Dr. Nelson and Mr. Doratt's list, was vaccinated Jan. 24, 1804, then fifteen months old, with eight day matter, producing four distinct vesicles, and the usual satisfactory scabs.

3. Lucy Ancell, No. 2664 in Dr. Nelson and Mr. Doratt's list, vaccinated Sept. 3, 1805, with eight-day matter, then five months old; had six well characterised vesicles, viz. three on each arm, and two subsequent distinct scabs.

Friday, May 8.—Dr. Domeir and Dr. Pearson reported that they had visited the above patients last Wednesday, May 6.—That they found one of the children, viz. John, had not more than thirty small black and brown scabbed eruptions, smaller than the small kinds of chicken-pock, and was in other respects pretty well. That Mary had a very numerous eruption, but distinct, and most of them were scabbed. Lucy had a still more numerous eruption; indeed, they were confluent on the arms and face; they were of the vesicular or bladdery kind, and in several parts bags of lymph hung from them; her face was swelled, and her eyes closed up for a day or two, but she is now walking about. George was exceedingly ill with the confluent sort; also bladdery, and more extensively confluent even than the former. The throat seemed a good deal affected, the respiration laborious, and the eyes almost closed up. The small-pox was in the neighbourhood at the time these children were taken ill; and many children had from time to time attended at the shop of this family when recovering from the small-pox, although they had not immediate intercourse with Mrs. Ancell's children.

It appears, upon the inquiry of the above physicians, 1. That Mary Anne, now aged twelve years, began to sicken twelve days ago, viz. last Friday week, April 24th; the eruption came out on Sunday the 26th. 2. John, now nine years of age, began to sicken the day following, viz. last Saturday but one, April 25th; the eruption came out on the Monday following. 3. Lucy, now aged seven years, sickened last Monday week, April 26th; and the eruption came out on Wednesday following. 4. George, aged four years, who had not been vaccinated, began to be ill last Tuesday week, April 27th; and the eruption came out on Thursday, April 30th.

Tuesday, May 12.—Dr. Pearson reported, that he had again visited the children of Mrs. Ancell on Saturday evening last: Mr. Ewbank had also visited them on Friday. Mrs. Ancell had likewise attended at Dr. Pearson's lecture-room yesterday, with the three children, recovering from the small-pox after the cow-pock. He is sorry to report that the child, George, ill of the

natural small-pox, died on Saturday morning, being the tenth day of the eruption.

Mrs. Ancell's three children, Mary, John, and Lucy, attended at the institution this day ; likewise Charlotte, another daughter, aged 17, who had the small-pox in the natural way severely when seven months old, and is now much scarred.

Mary seems to be nearly recovered, but has distinctly the marks upon her ; the scabs having fallen off, it now appears that she has one very distinct scar upon the left arm from vaccination.

On John, very few marks from the small-pox can now be seen, he is so much recovered ; three distinct scars on the left arm from vaccination are now seen.

From Lucy, the scabs are falling off very fast, but they are still very considerable and confluent on the lower arm. The cuticle is peeling off entirely from the fingers of both hands ; three scars from vaccination are now perceivable upon the left arm, and one on the right.

The following remarks and conclusions are offered by Dr. Pearson ;

1st. That in a certain proportion of cases, the constitution is not rendered unsusceptible of the small-pox, after going through the cow-pock in the most characteristic manner; for the symptoms and progress of the disease in the above cases were too distinctly marked to admit of a doubt of their being small-pox.

2dly. As a confirmation of what has happened in our practice and elsewhere, this is one of the most decisive examples of constitutional susceptibilities existing in certain families that has ever been observed.

3dly. Two of the cases were much more severe than have ever occurred at this institution, and which, perhaps, have rarely happened in private practice after vaccination. The third was so rapid in its progress, and the eruptions dried up so speedily, that one cannot doubt that, although the susceptibility of the small-pox was not entirely destroyed, yet it was so partially destroyed as to produce an extremely mitigated small-pox, in respect to both symptoms and eruption, agreeably to what commonly occurs in cases of failure of cow-pock.

4thly. As these cases of failure occurred at the same time, although inoculated in the years 1801, 1804, 1805, it seems to preclude the supposition of any thing like unsusceptibility for a determinate number of years.

5thly. The vaccination being under the direction of two different competent surgeons, the matter being from three different sources, and each time at the most efficacious period, precludes any reason for imputing the failure to the kind of matter or the mode of conducting the practice.

6thly. The scars upon the arms are at least collateral proofs of the affection having been duly produced.

7thly. It does not appear that the children had the subsequent small-pox mitigated in any proportion to the degree of affection by vaccination.

8thly. The circumstance of the successive seizure of four patients in the same family, decidedly prove the disease to be small-pox, if any doubt had arisen on account of the characteristic symptoms.

9thly. Matter has been taken for inoculation from the child George, for further, though unnecessary, proof.

10thly. It seems extremely probable, that, but for previous vaccination, not only John, but that Mary and Lucy, would have had the disease much more severely.

Dr. Pearson has to remark, in addition to the above conclusions,

1st. That the mother of these children had the small-pox, when five years old, very severely; that their father's sister had them still more severely, with what is called the purples; but her father had them slightly.

2dly. As the four children in this family all fell ill within four days of one another, viz. from Saturday to Tuesday, they could not have communicated the disease to one another, but in all probability derived it from one common origin, viz. that of some child ill of the small-pox frequenting the shop, as already said, and conveyed from the mother, who had the care of the shop, to her children, for they had never been in contact with those ill of the small-pox by living or playing with them.

3dly. It is worthy of remark, that, however severely two of these children suffered from the small-pox after cow-pock, it is probable they would have suffered much more, and even have lost their lives, if they had not been previously vaccinated, from the consideration of the constitution of the family on the mother's side. The death of the child, as already said, and the narrow escape with life, (but deformed,) of the eldest daughter, Charlotte, as already mentioned.

JAMES JACKSON, M. D. has been appointed Professor of the Theory and Practice of Physick in Harvard University.

RECENT ENGLISH PUBLICATIONS.

Natural History, general and particular, by the Count de Buffon, illustrated with above six hundred plates. The History of Man and Quadrupeds translated, with notes and observations by William Smellie. A new edition, carefully corrected and enlarged, &c. By William Wood, F.L.S. In 20 vols. 8vo.

Anatomical examinations. 2d edition. 2 vols.

A view of the Nervous Temperament, by T. Trotter, M. D. 3d edition. with large additions.

Dr. Stokes is employed on a Botanical Materia Medica, to make four 8vo volumes.

An Essay on Scrophula, in which an account of the effect of the Carbonas Ammoniæ as a remedy in that disease is submitted, &c. By Charles Armstrong, M. D. 8vo.

An Address to the Apothecaries of Great Britain; with an Appeal to the Committee to whom the interests of Pharmacy are delegated, by the general meeting held at the Crown and Anchor Tavern, London, July 3d, 1812. By Pharmacopola Verus. 8vo.

On the Uncertainty of the Signs of Murder in the Case of Bastard Children. By the late William Hunter. 8vo.

Treatise on the Influence of Climate on the Human Species; and on the varieties of men resulting from it; including an account of the criteria of intelligence which the form of the head presents, and a sketch of a rational System of Physiognomy, as founded on Physiology. By N. C. Pitta, M. D. 8vo.

Account of the island of Madeira. By N. C. Pitta, M. D. 8vo.

Elements of Chemical Philosophy. By H. Davy. Vol. 1. 8vo.

RECENT AMERICAN PUBLICATIONS.

Elements of Botany, or Outlines of the Natural History of Vegetables. By Benjamin Smith Barton, M. D. 2d edition. In 2 vols. Illustrated by 40 plates. Vol. I. Philadelphia.

Dissertation on Chronic Debility of the Stomach. Published by the Connecticut Academy of Arts and Sciences. By Benjamin Woolsey Dwight. New Haven.

The American Medical and Philosophical Register, No. I. Vol. 3. This publication is much enlarged, and rendered highly elegant.

A System of Operative Surgery, founded on the basis of Anatomy. By Charles Bell. Publishing by Hale and Hosmer, at Hartford, in two vols. 8vo. containing upwards of 200 engravings.

Engravings of the Arteries, illustrating the anatomy of the Human Body, and serving as an introduction to the study of the arteries. By Charles Bell. With 14 coloured engravings. Boston; Bradford and Read and A. Finley, Philadelphia. It is intended, if sufficient encouragement should be given, to follow the engravings of the arteries with those of the bones, muscles and joints, nerves and brain.

The fourth number of Dr. Bruce's Mineralogical Journal is about to be published.

Inaugural Dissertation on Mercury. By John W. Francis, M. D. New York.

METEOROLOGICAL JOURNAL.

BY JOHN GORHAM, M. D. BOSTON.

FOR JULY, 1812.

		Thermometer.			Barom.	Wind.		Weather.	
	Day of	7 A. M.	3 P. M.	10 P. M.	3 P. M.	7 A. M.	10 P. M.	Day.	Night.
☾	1	58°	69°	61°	30.02	N.	N.W.	Fair.	Fair.
	2	57	65	63.5	30.05	N.	S. W.	Sho'ry.	Ditto.
	3	69	80	71	29.78	N.W.	W.	Fair.	Ditto.
	4	68	84	73	29.90	W.	W.	Ditto.	Ditto.
	5	70	82	73	29.86	W.	S. W.	Ditto.	Ditto.
	6	70	78	71	30.	N.W.	W.	Ditto.	Ditto.
	7	76	76	68	30.	W.	E.	Ditto.	Rain.
○	8	65	65	61	30.08	E.	E.	Rain.	Ditto.
	9	61	65	64	29.94	E.	N.	Ditto.	Cloudy.
	10	59	60	59	30.	E.	N. E.	Cloudy.	Ditto.
	11	60	60	58	29.97	E.	E.	Rain.	Rain.*
	12	60	70	66	29.90	S. E.	E.	Fair.	Fair.
	13	70	75	69	29.99	N.	W.	Ditto.	Ditto
	14	69	80	70	29.94	W.	S. W.	Ditto.	Ditto.
	15	73	75	66	29.70	S. W.	N.W.	Sho'ry.	Ditto.
☽	16	63	75	65	29.98	N.W.	N.W.	Fair.	Ditto.
	17	65	78	67	30.08	N.W.	N.W.	Ditto.	Ditto.
	18	68	77	68	29.78	W.	S. W.	Sho'ry.	Cloudy.
	19	70	73	67	29.64	N.	N.	Ditto.*	Fair.
	20	70	75	68	29.67	N.	W.	Fair.	Ditto.
	21	70	73	68	29.78	E.	E.	Ditto.	Ditto.
	22	70	77	68	29.80	S. W.	S. W.	Cloudy.	Sho'ry.
	23	69	75	68	29.78	W.	S. W.	Fair.	Fair.
●	24	67	69	63	29.72	E.	W.	Sh'ry.*	Sho'ry.
	25	69	76	64	29.78	W.	W.	Ditto.	Fair.
	26	67	76	69	29.85	W.	W.	Fair.	Ditto.
	27	68	73	68	29.95	N.W.	W.	Ditto.	Ditto.
	28	68	70	65	30.03	N.W.	W.	Sh'ry.*	Ditto.
	29	65	68	66	30.04	S. E.	S. E.	Ditto.	Rain.
☾	30	68	74	66	29.76	S.	S. W.	Rain.*	Cloudy.
	31	63	70	64	29.80	E.	S. E.	Fair.	Ditto.

Mean temperature $67\frac{1}{2}$°.
Mean pressure of the air 29.86.
Quantity of Rain 3.96 inches.

* Thunder and lightning.

METEOROLOGICAL JOURNAL,

FOR AUGUST, 1812.

		Thermometer.			Barom.	Wind.		Weather.	
	Day of	7 A. M.	3 P. M.	10 P. M.	3 P. M.	7 A. M.	10 P. M.	Day.	Night.
	1	66°	72°	69°	29.81	S.	S. W.	Sho'ry.	Sh'ry.*
	2	70	75	69	29.63	W.	W.	Fair.	Fair.
	3	70	78.5	70	29.74	W.	W.	Ditto.	Ditto.
	4	69	75	68	29.96	N.W.	W.	Ditto.	Ditto.
	5	68	75	69	30.15	W.	W.	Ditto.	Ditto.
	6	67	66	66	30.04	E.	E.	Mist.	Mist.
○	7	67	78	69	29.92	W.	W.	Fair.	Fair.
	8	69	80	70	30.03	W.	W.	Ditto.	Ditto.
	9	73	83	74	30.10	W.	W.	Ditto.	Ditto.
	10	70	73	70	30.04	N.	S. E.	Cloudy.	Sho'ry.
	11	65	62	59.5	29.86	E.	E.	Rain.	Rain.
	12	59	60	58	29.87	E.	E.	Ditto.	Ditto.
	13	60	63	61	29.92	E.	E.	Ditto.	Ditto.
	14	61	63	60	29.92	N.	E.	Ditto.	Ditto.
☽	15	61	72	66	29.73	N.	N.W.	Fair.	Fair.
	16	67	76	67	29.88	N.W.	W.	Ditto.	Ditto.
	17	66	62	60	29.88	E.	N.	Rain.	Mist.
	18	60	70	64	30.08	N.	W.	Fair.	Cloudy.
	19	63	69	68	30.18	S. W.	W.	Sho'ry.	Ditto.
	20	69	77	73	30.13	W.	S. W.	Cloudy.	Sho'ry.
	21	69	65	63	29.92	E.	E.	Rain.	Rain.
●	22	63	66	63	29.78	E.	E.	Ditto.	Cloudy.
	23	64	73	67	29.92	N.E.	W.	Fair.	Fair.
	24	65	75	67	29.90	W.	W.	Mist.	Ditto.
	25	70	81	74	29.83	W.	W.	Fair.	Ditto.
	26	71	77	65	29.98	W.	N.W.	Ditto.	Ditto.
	27	58	65	58	30.06	N.W.	N.W.	Ditto.	Ditto.
	28	60	72	64	29.93	N.W.	W.	Ditto.	Ditto.
☾	29	64	79	67	29.82	W.	W.	Ditto.	Ditto.
	30	66	80	65	29.75	W.	N.W.	Ditto.	Cloudy.
	31	59	65	58	30.	E.	E.	Ditto.	Fair.

Mean temperature $68\frac{1}{2}$°.
Mean pressure 29.901.
Quantity of rain 5.26 inches.

* Thunder and lightning.

METEOROLOGICAL JOURNAL,

FOR SEPTEMBER, 1812.

		Thermometer.			Barom.	Wind.		Weather.	
	Day of	7 A. M.	3 P. M.	10 P. M.	3 P. M.	7 A. M.	10 P. M.	Day.	Night.
	1	59°	67°	63°	29.97	W.	W.	Cloudy.	Fair.
	2	65	77	70	29.83	W.	S. W.	Ditto.	Sho'ry.
	3	67	71	65	29.92	N.W.	N.W.	Fair.	Fair.
	4	60	60	59	30.26	N. E.	N. E.	Cloudy.	Rain.
○	5	58	59	60	30.06	E.	E.	Rain.	Ditto.
	6	60	62	58	30.10	E.	E.	Ditto.	Fair.
	7	60	63	59	30.08	E.	E.	Fair.	Sho'ry.
	8	60	65	58.5	29.96	E.	E.	Ditto.	Fair.
	9	58	75	66	29.88	W.	W.	Ditto.	Ditto.
	10	64	74	62	30.05	N.W.	N.W.	Ditto.	Ditto.
	11	60	64	61	30.30	N.	E.	Ditto.	Ditto.
	12	65	75	67	30.15	W.	W.	Ditto.	Cloudy.
☽	13	68	80	71	29.95	W.	W.	Ditto.	Ditto.
	14	60	64	61	30.05	E.	E.	Mist.	Ditto.
	15	61	69	60	30.15	N.W.	N.W.	Fair.	Fair.
	16	60	66	58	30.30	N.W.	N.W.	Ditto.	Ditto.
	17	59	67	59	30.18	W.	E.	Ditto.	Cloudy.
	18	62	66	59	29.90	S. W.	W.	Sho'ry.	Fair.
	19	57	66	58	29.80	W.	W.	Fair.	Sho'ry.
●	20	52	54	47	29.50	W.	W.	Sho'ry.	Fair.
	21	46	57	50	29.69	N.W.	W.	Fair.	Ditto.
	22	52	65	52	29.75	W.	.	Ditto.	Ditto.
	23	48	57	47	30.02	N.	N.W.	Ditto.	Ditto.
	24	45	64	55	30.05	N.W.	N.	Ditto.	Cloudy.
	25	53	58	50	30.07	W.	W.	Rain.	Fair.
	26	50	63	53	29.95	W.	W.	Fair.	Ditto.
☾	27	55	67	51	29.78	W.	N.W.	Ditto.	Ditto.
	28	46	55	50	30.30	N.W.	N.W.	Ditto.	Ditto.
	29	45	56	52	30.24	N.	E.	Ditto.	Rain.
	30	50	57	52	29.70	E.	N. E.	Rain.	Ditto.

Mean temperature $61\frac{3}{4}$°.
Mean pressure 29.90.
Quantity of rain 1.60 inches.

RESULTS OF METEOROLOGICAL OBSEVATIONS FOR ONE YEAR ENDING OCT. 1, 1812.*

1811—1812.	THERMOMETER.			BAROMETER.			WEATHER. Days.				WIND.								RAIN.	SNOW.
Months.	Max.	Min.	Mean.†	Max.	Min.	Mean.	Fine.	Cloudy.	Wet.	Snowy.	N.	N. E.	E.	S. E.	S.	S. W.	W.	N. W.	In inches & decimals.	In inches by estimation.
October	81°	33°	55°	30.50	29.53	29.99	17	3	11	0	0	7	2	1	3	3	7	8	3.90	
November	59	21	43.5	30.60	29.50	30.05	14	6	8	2	0	3	1	1	0	3	6	16	5.45	
December	52	4	29	30.51	28.96	29.63	13	8	5	5	3	3	0	0	2	3	13	7	4.60	12.00
January	44	—6	21	30.43	29.17	29.80	12	6	3	10	6	0	2	0	0	0	11	12	1.50	7.00
February	49	4	27	30.30	29.29	29.79	10	6	4	9	3	1	3	3	1	4	5	9	2.82	17.00
March	48	8	29	30.20	29.65	29.92	15	10	4	2	2	5	9	0	0	0	8	7	1.20	2.
April	75	33	51.5	30.31	29.50	29.90	12	10	6	2	1	0	14	0	1	4	6	4	2.40	4.
May	80	35	54	30.24	29.60	29.82	15	7	8	1	3	1	19	0	0	3	2	3	5.10	
June	81	50	63	30.04	29.43	29.73	8	7	15	0	5	4	4	1	1	3	2	10	5.23	
July	84	58	67½	30.08	29.64	29.86	16	1	14	0	1	1	8	2	0	4	7	8	3.96	
August	83	58	68½	30.18	29.63	29.90	16	2	13	0	0	2	9	2	1	1	12	4	5.26	
September	80	45	61¾	30.30	29.50	29.90	14	7	9	0	0	2	6	0	0	2	13	7	1.60	
Gen. Results	84	—6		30.60	28.96	29.78	162	73	100	31	24	29	77	10	9	30	92	95	43.02	42.00

* This table is constructed on the plan of Dr. Clarke's of Nottingham, Eng.

† From the want of a self-registering thermometer, the temperature of the whole twenty-four hours could not be noted. Three observations therefore were made between 7 A. M. and 10 P.M. including a space of 15 hours of each day. The result of course does not express the real mean temperature of each day. The medium here mentioned was found by taking the mean temperature of fifteen hours in each day, and comparing them with each other.

The preceding summer has been remarkable for its coldness and moisture. The mercury in the thermometer never rose above 84 deg. and in two or three instances only attained to that point. The prevailing winds were northerly and easterly, and the latter were usually accompanied with copious rains. The quantity of rain for a year past has been much larger than usual. This season has also been remarkable, at least in Boston, for the absence of those diseases which generally appear in warm weather. Cholera of infants can hardly be said to have existed, and very few cases of typhus fever and dysentery have occurred; and these were mild and easily removed.

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